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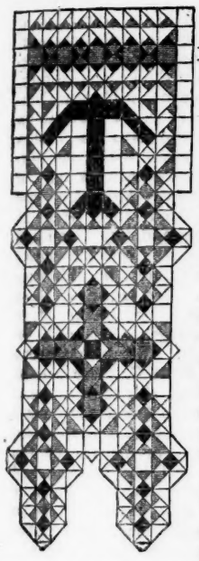


Lodge Architecture.

THE lodges which stand as the advanced guards on the approach to a house form a special class of domestic architecture, capable of a good deal of characteristic treatment and expression. At various times there have been attempts to give to them a distinctive and marked character; at other times they have subsided into the strictly utilitarian. This latter fate, however, has befallen them, chiefly at a time when house architecture on a larger scale has also been strictly utilitarian. In general, a lodge has been considered an opportunity for some effort at prettiness on the part of the architect.

At one time there was a very general feeling in favour of rustic lodges,—a taste rather fostered by landscape-gardeners, whose ideas of the picturesque it fell in with. What is called rustic architecture, in the old landscape-gardeners' sense, however, must always be regarded as a false taste when applied to buildings for actual habitation. Its most excusable employment is, perhaps, in the formation of arbours and shelters in the midst of garden and plantation scenery, and even then the taste is a questionable one. In the application of rustic architecture to habitable lodges there is, moreover, the drawback that it almost invariably leads to the construction of an uncomfortable and somewhat unsanitary dwelling. The idea that lodges should be considered in regard not only to their appearance, but to the comfort of those who have to live in them, is, in fact, only a recent one. It used to be considered sufficient to make the lodge an attractive feature externally, and then the cutting up of the interior into habitable rooms was proceeded with as a kind of after-thought. If it were a Classic lodge, the most ingenious trickery had to be resorted to, to conceal the windows and chimneys; the thing being really a kind of architectural model into which some inhabitants were to be got somehow, in order to turn it to a useful purpose. If it were not for the comfort of the inhabitants, or if the lodge were used merely as a kind of sentry-box for an attendant to sit in during the day, it might afford a pardonable opportunity for trying a little architectural modelling and reproduction, but it is hardly fair, nor architecturally truthful, to treat a cottage dwelling, which the lodge really is, in that way.

The lodge is, in fact, an opportunity for a little rather interesting experiment in architectural expression on a small scale. It should be a kind of forecast of the architecture of the house at the entrance of whose grounds it stands. It should prepare the visitor for the general style and design of the house, and the materials of which the latter is constructed. But, at the same time, it should never look like a slice of the house cut out and stuck down at the entrance, as is sometimes the case. It must have its own scale and character distinctly marked, showing the features of the house architecture adapted to the scale of a smaller building. And it must never look like a diminutive house itself, *i.e.*, like a larger house seen on a smaller scale. There should be something piquant and unusual about its arrangement, such as would be suitable in a cottage, but not on a larger scale.

The first point in aiming at this is the treatment of the plan. The plan must not be a square or a cube, with the various sized rooms in the interior fitted in behind the walls, and with no indication of their arrangement. This is, of course, a questionable way of treating even a building of large size; but there may be something to be said for it in cases where stately and grandiose effect is especially aimed at. But this, of course, can never be achieved on a small scale. A small building, placed in a prominent position, must aim at being interesting by a certain picturesqueness and unusual character of arrangement. The lodge to a house of the ordinary size will generally consist of a living-room and one or two small bedrooms, and scullery and other offices. The arrangement of the living-room so as to separate it a little from the rest of the plan,—placing it in a semi-angular position in regard to the other block, giving it a circular or octagonal form,—such devices as these will serve to give some character to the general disposition of the little building in a way which would be quite unsuitable in a building on a larger scale, and without impairing its practical suitability as a plan. If, on the contrary, these few requisite rooms are all inclosed in one cube of brickwork or masonry, the essential character of the building as a "lodge"—an ornamental house of attendance at the gateway of the grounds,—is entirely lost; the building becomes merely a cottage, or a specimen of model dwellings for the working-classes.

This latter character it should have in one sense, however, more than it generally has. Far too often the planning and sanitary arrangements of the lodge are carried out in a rather primitive manner. All the rooms open out of each other; the living-room opens blankly on the outer air without any sort of porch or penthouse to defend it, and occasionally a lodge is assigned to married people with children, with only one bedroom, an arrangement long since condemned even for the poorest class of people's dwellings. We have met with instances of such lodge-planning as this in vicinities where it would not have been expected; but such arrangement, or want of arrangement, is very much to be deprecated. A lodge ought to be a model cottage in the sense of being a model plan; a collection of only three or four rooms planned so as to get the greatest amount of comfort and isolation of the different rooms which the available space will allow, and at the same time, so as to present a little piquancy in planning which may remove it from the category of the mere cottage, and show that there has been an intention to make it architecturally effective as well as comfortable.

What style of architectural effect the lodge should aim at ought to depend a good deal on what is the character of the house to which it stands sentry. At present there is a tendency towards a fashion for very picturesque lodges, buildings all run to roof, as one may say, and the windows stuck all over them at random. But this is really quite out of place unless the house itself is a building of the same sort, with a confusion of high irregular gables and low walls and dormers, and a generally rabbit-warren appearance. There was a set of fashion in favour of this rabbit-warren domestic architecture a few years ago, but it seems to be already declining. Experience very soon proves that the rabbit-warren style is not the best for a comfortable house, however well it may look in a picture. The style is not so architecturally unsuitable to a lodge, but if the house is built in a dignified and really architectural style, there seems no reason why the proprietor or his architect should descend to hut-building when they come to the entrance-gate.

Keeping, then, to the main style of the house as the model for the architecture of the lodge, and giving to the plan, as aforesaid, a certain piquancy of arrangement, we shall find various ways of imparting to the design the same degree of piquancy, such as the style adopted admits of. If the architecture partakes of Classic or Italian character, we may assume absolute uniformity or symmetry of design if we like, provided we are careful to give to this symmetrical design the character of elegance rather than of massiveness or dignity. But even with Classic design a little playfulness in the design of the lodge is best; a circular or semicircular porch introduced at "an odd angle," or some such feature happily treated, will take away from the serious formality which would otherwise attach itself to the style, and give an appearance of graceful irregularity. This, of course, may be much more easily done in the case of a lodge partaking more of Gothic character, where a certain degree of unsymmetrical arrangement appears quite natural and unforced. Fanciful character may be obtained, too, by reversing the usual order of things in some minor incidents of the building. In the case of lodges which are intended to be picturesque half-timbered cottage buildings, this fanciful effect has been often sought in making the upper story oversail the lower (where there

are two stories), a treatment naturally enough suggested by the treatment of street houses in many of our old towns which were originally built in half-timbered architecture. But this same treatment, making the superstructure oversail the ground story, or the surbase (if the building is in one story) may be applied to Classic design also, on a small scale, with very happy and picturesque effect. The treatment of the windows, again, influences the architectural expression of the structure. Lofty windows impart a palatial effect, low and wide windows give an expression of quietness and domesticity suitable to a small domestic building. These are indications of the manner in which special expression may be imparted to the lodge, employing the same architectural style and similar features as in the house itself, but treating or grouping them differently.

Chimneys are susceptible of a great deal of characteristic treatment in lodge architecture also, and are in this case more important objects than in larger buildings, since their actual size must be nearly the same in any case, and they are therefore much more conspicuous objects in a small building, much nearer the eye and much more important in their effect on the whole. It is, therefore, peculiarly suitable in a lodge to pay some attention to the design of the chimneys, and to endeavour to render them in a special degree an ornament to the whole instead of an eyesore. But the attempt to give more architectural importance to our lodge by adding some unnecessary feature, such as a tower or a cupola on a small scale, is not to be regarded as in any better taste in this case than in larger works of architecture. It sometimes apparently is so regarded; it is considered that in a lodge one may indulge the fancy for making ornamental architecture; but the result is only likely to look artificial and pretentious, and to excite sarcastic comments. The lodge should not be a mere piece of ornamental architecture, but a necessary adjunct treated with as much fancy and ornamental effect as its practical uses suggest and admit of.

The entrance-gate should be regarded and treated as a part of the lodge design. It is not sufficient to build gate-piers and hang between them a respectable-looking and well-constructed gate. The gate-piers should belong to the design of the lodge, and the nearer one of them, if the lodge is a one-sided one, should be closely connected with the design of the building. When a lodge on a rather larger scale is built, a fine and complete effect is produced by throwing a part of the building over the gateway, or at least roofing over the entrance and throwing a large arch across between the opposite lodges. This refers to a rather larger class of building than that which we have been suggesting, or to a double edition of such a building,—one, perhaps, used as a gardener's cottage, and it is a device only worth adopting when there is a decided intention to produce something bordering on an effect of stateliness. And where this form of entrance is adopted, we regard it as a matter of rigour that the two opposite lodges, which thus form buttresses to the gateway, should be identical in design, at all events in their general mass and size, even if small details may be varied. The employment of an arched entrance such as this between two lodges of different shape and size, as we have seen it done with a view to picturesque irregularity, is quite a mistake. The result is a lob-sided appearance, and the loss of all the effect of stateliness of approach which the use of the arched entrance is calculated to produce, and which, when the lodge buildings are on this extended scale, may be supposed to be the aim of the architect, as grace and piquancy should be his aim in dealing with the small single lodge only, which is the more usual form of entrance building.

The roofed gateway to a double lodge has the practical advantage of providing for one point of convenience which in the single lodge is often overlooked altogether. This is in regard to the fact that the main duty, or, at least, a constant duty, of the inhabitant of the lodge is to open the gate for visitors, and to close it afterwards; and the question of giving the gate-keeper some cover when he or she has constantly to go out to the gate in bad weather, is a matter worth considering, not only for personal comfort, but because, under such circumstances, the closing of the gate at least is likely to be better attended to. This is a complaint we have actually heard made,—that the entrance-gate was constantly open, because the lodge-keeper or his wife did not care to go out in the rain to close it. The lodge should be so placed and planned, therefore, that the door and porch should be close up to the gate,—a little matter of convenience often overlooked.

Considered in this way, in regard to its appropriate architectural expression and its practical convenience for its special object, an entrance-lodge affords a very good opportunity for the application of true and refined taste and common sense in architectural design, and its appropriate treatment is not a bad test of architectural ability, though on a small scale.

THE RELICS OF THE THEBAN KINGS.

Further reflection on the wonderful news from Egypt mentioned in our last number confirms our opinion of its extraordinary importance, and of the light which it throws on the general outline of Egyptian history, even before the translation of the papyri. As to the contents of these, of course, it would be idle to hazard a guess, although, since we last wrote, we have been told that the splendid papyrus in the coffin of Queen Ha-ta-su contains the ritual of the dead. Still it may commence with this, and yet include an account of the great works of the reign of this sovereign; and no doubt will tell us of the date of her death, which is as yet unknown. And it is no guess to say that the sequence of royal mummies, and presumably the papyri found with them, cover the date of the Exodus, according to any view whatever that may be taken of the chronology. It is not, therefore, being too sanguine to expect that we may shortly be presented with an account of this great historic event drawn up from the Egyptian point of view. It may be confidently anticipated that this will be very different from that taken by the sacred historian. Amenophis IV., whose mummy may probably be among those now discovered, is called in the inscriptions not only the "Pacificator of Egypt," but "the tamer of the Syrian shepherds." The dates of this king, who reigned for thirty-seven years, cover that of the Exodus, according to the most lucid account yet given of the chronology of the Pentateuch; and at all events the era of the eighteenth dynasty was one of the most magnificent periods, as regards the art of the builder, that has occurred in the history of the world.

We have further to add, as confirmatory of our view as to the cause of the alarm felt by the Egyptian priests, that we are in possession of an inscription of unusual magnitude on a granite block in Abydos. The upper half of the stone is at present wanting, but the lower part is quite legible, having been probably preserved from obliteration by having been built into some edifice in the cemetery of Abydos. The inscription is stated by Brugsch to give a general representation of the decrees of the Assyrian King, whose names and titles are completely preserved. The tablet records the visit of Shashank, king of Assyria (grandfather of the Shashank, king of Egypt, who was contemporary with the latter part of the reign of Solomon), to Thebes, and to the tomb of his son, Namurath or Nimrod (referred to in our former article), at Abydos. The king was indignant at the neglected state in which he found the temple and tomb of his son. It appears that "the Egyptian officials, who probably had little inclination for honoring the remains of an Assyrian king, had plundered, as far as they could, both the living and lifeless temple revenues which had been appointed for keeping up the grave. They were brought to an account by King Shashank, and, with the approval of the Theban god Amon, they were all punished with death" ("Egypt under the Pharaohs," vol. ii., p. 198). The inscription records the dedication of the statue of Namurath in the words, "Then his majesty had the statue, in the form of a walking man, of the Osirian great king of Assyria, the great king of kings, Namurath, brought up the river to Abydos. There were in attendance on it a large body of soldiers in many ships, no man knows their number, together with the ambassadors of the great king of Assyria. And it was set down in the splendid royal chambers of the holy of holies of the right eye of the sun, to carry the offerings on the altar-table of Nifour. According to the directions of the holy anointing, the dedication was accomplished. . . . . A memorial tablet was erected in the language of the Land of Babel, containing the command."

It will at once strike the reader familiar with the subject, that no cuneiform inscriptions corresponding with this decree have been discovered in Egypt. Nor is the explanation given by Brugsch at all unreasonable, to the effect that the Egyptians, after the departure of the Assyrian great kings, carefully destroyed all their monuments.

We thus have distinct evidence of a state of things which fully explains the fear entertained by the guardians of the tombs of the native Egyptian kings of the possible result of an Assyrian conquest. We find war actually made on the records of the dead. If the Egyptians, under the reign of Pinotem, or any of the less-known kings of the twenty-first dynasty, had actually dishonoured the temple and tomb of an Assyrian king, what more likely than the fear of reprisals on the remains of the native Egyptian sovereigns? The iconoclastic fury which disfigured such magnificent monuments as were those of the Theban kings of the eighteenth and nineteenth dynasties must have sprung from a hatred of which we see indications in this remarkably preserved inscription. It must also have been exerted by rulers of a sufficient power not to dread any popular outburst in consequence of the sacrilege. We have nothing of this kind recorded as to the accession of the Persian dynasty, about 527 B.C. It is not conceivable that Cambyses would have desired to wreak his spite on the effigies of sovereigns who reigned at Thebes more than a thousand years before his day. With regard to the Assyrian kings of the twenty-second dynasty, the case was quite different. They fixed their seat at Bubastis, then for the first and only time made the capital of Egypt, no doubt with the object of keeping open the communication with their more eastern dominions. The names of these kings show their Assyrian descent,—Takelut, or Tiglath, Osorkho or Sargon, Namurath or Nimrod, Shashank himself. At this time, about 980 B.C., and down to 810 B.C., there is good reason for supposing that a strong personal hatred existed between the foreign sovereigns and the priesthood, or, at all events, the personal representatives, relatives, or friends of the native dynasties. The ruthless, savage, and ferocious character of the warfare carried on by the Assyrian kings is well known. It is on record in their own inscriptions. One of the earliest dated records refers to the removal of a goddess from a temple in which she had been worshipped for more than 1,500 years. Add to this, that the special sharpness of revenge was sure to be at work, as evinced by the character of the persons accused of disrespect to the house of Namurath. We thus have a series of indications which point very distinctly to the date of the construction of the secret gallery at Deir-el-Bahari, and to the object, as well as the occasion, of the removal to that carefully-hidden asylum of the mortal relics of the greatest sovereigns that the world has ever known. The date is fixed as to its greatest antiquity, by the presence of the relics of King Pinotem, somewhere about B.C. 1025, or of any later king who may be identified. And it is fixed, we think, no less distinctly as to its latest antiquity by the accession of the twenty-first dynasty, about B.C. 980, subject to correction from any further discoveries as to the exact dates and circumstances of the Assyrian conquest of Egypt. We thus come to a limit of forty-five years, upwards and downwards, for the date of the construction and removal of the remains. Nor could this have been done in a hurry. We must allow at least some six months for the excavation of the pit and gallery; and as it must have been an object with those who prepared this rock-cut sanctuary to make its existence as little known as possible, the probabilities are in favour of a considerably longer time of preparation. This may hereafter be found to agree with the period between the burial of Namurath, or rather the decree of Shashank the Elder, and the establishment of the power of Shashank, king of Egypt, grandson of the elder Shashank, and son of Namurath. Thus the mutilation of the magnificent memorial statues of the Ramessid kings, and their predecessors of the eighteenth dynasty, would be indicated as a feature of the struggle, marking the predominance of the foreign invaders. It is unlikely that they would have so far outraged the religious feelings of a great mass of their new subjects after their power was established, and their fury had been to some extent assuaged by the enjoyment of power. Add to this, that on the first opportunity, which we can hardly attribute to an earlier date than the accession of the twenty-third dynasty, at Tanis, about

B.C. 810, there was enough of the old national feeling dominant to lead to the careful obliteration of the inscriptions of the intrusive Assyrian dynasty, and we have a sequence of events, and a picture of human passions and sentiments, which afford a very plausible explanation of one of the *cruces* of ancient history,—the cause and the date of the mutilation of the most splendid monuments of Egypt.

INTERNATIONAL ELECTRIC EXHIBITION.

By the time that the nineteenth century had run a third of its course, the position of England as the primate of the industry of the world was established. We do not forget, although this is not the occasion to detail, what had then been done by other countries, notably by France and by America, in the ways of advancing mechanical science. But Watt, Arkwright, and Stephenson were not only representative men, but sound and honest Englishmen. Fighting, as all great benefactors of our race have had to do, against the dead-weight opposed to them, not more by ignorant than by selfish men, it was at home that their triumphs were obtained, and that, little by little, naturally, and rather in spite of, than owing to, the unintelligent action of Parliament, our vast steam factories, textile factories, railways, and steam shipping, grew to a magnitude of which it is our hope to be able to give our readers hereafter more definite ideas.

Connected with this early and autogenous growth of a new creative power was the fact that those who seized Fortune by the forelock wrought only for their own hands. Not only so, they soon began, instead of aiding, to race and to rival one another. There was no central direction, no machinery to insure the attainment by the nation of the greatest good to be derived from the welfare of the individual, no recognition of the fact that while the merchant has only to regard his relation to his fellow merchants, it is the duty of the statesman to regulate the relation of the nation to other nations, as regards its means of production and of resource, no less than its means of defence. Thus among our articles of export the very machines upon which our primacy depended formed a considerable item, the exports of machinery rising in annual value from 593,000*l.* in 1840 to 10,000,000*l.* in 1873. At the same time, our capital was freely poured out, in the shape of foreign loans, to feed the industry (or the dishonesty) of the rivals we were raising up. Our engineers for a time were much sought abroad, as more recently was the case in Japan; and there was neither disposition nor means by which a wholesome warning could be given to the nation. Our money was absorbed, our men were used, and too often ill-used. And with a rapidity which rivalled that of the spread of the railway system itself, forges, factories, mines, railways, and all the appliances of industrial science started from the soil in which we had been the first to cast the seed.

Thus we no longer hold at all events an undisputed primacy. England has not, we believe, hitherto recognised this fact. Of its truth, its magnitude, and its import, there can be but little doubt. But if anything could be calculated to bring it forcibly home to the mind of the statesman, the merchant, or the engineer, it is the fact that it is Paris, and not London, which is the scene of the International Exhibition of Electricity in the present year. It is Paris, and not London, that has first bidden the world to study, within her walls, the state of that wonderful discovery which bids fair to work even a greater industrial and physical revolution than has hitherto been accomplished by the steam-engine under all its various modes of application.

The inauguration of this important exhibition took place on the 10th of August, with all the *éclat* that could be given to it by the Government of France. The President of the Republic arrived at the scene, accompanied by ministers, in full uniform, and was received by the Minister of Posts and Telegraphs, and the President of the Exhibition Commission. The objects of the exhibition comprise even more than the wide field of the applications of electricity as a motor and illuminative power. Of this there is very much displayed. Another branch of the subject, which, as far as we have seen, has not as yet received due attention, is the application of electricity as a metallurgic and chemical power. That, no doubt will come; at present it is limited to electro-depositing. But as far as we have as yet seen, it is in the application of electricity as a means of communicating thought, and not only of sending messages by signal, by writing, or by speech, from man to man, but as echoing the voice of nature, stereotyping the indications of her meteorological action, and thus forming a wholly new and exhaustively instructive means of direct communication between nature and man, as well as between man and man, that the Exhibition of 1881 offers the most wonderful instances of the natural magic of science.

The great hall of the Palace of the Exhibition is a masonry building, 250 mètres in length by 100 mètres in width. Lofty iron pillars support a semicircular arched roof of glass; they are 8 mètres apart, and carry galleries, the spaces under which contain steam-engines, boilers, and dynamical apparatus. A set of four large Belleville boilers, which are heated by coal-dust, supply 16,000 lb. of steam per hour, or a force equal to 800-h p. nominal. There are also Otto gas-engines to the extent of 200-h.p. more. This is the provision made by the French syndicate, which supplies motor-power for a charge of 33 per cent. on the night receipts. French, English, and Belgian manufacturers have also provided many more steam-engines and gas-engines for use by private contract.

Among the English exhibitors the Brush Light Company is the first in the field. Their motor-power is supplied by seven Robey engines, having an aggregate of 137-horse power. Seventeen machines are fixed on concrete foundations, sixteen being used for illumination and one for the chemical service of electro-plating. One of the arc-light generators sustains sixteen lights, another forty, of 2,000 candle-power each; and one of the same pattern as the last, but differently applied, produces a single light of 150,000 candle-power! This is three times the power of the first-class lighthouse light contributed by the French Minister of Public Works! In addition to the above is a machine sustaining six lights of 3,000 candles each, another of six lights of 6,000 candles each, a one-light machine of 1,500, and a one-light machine of 50,000, candles.

Among incandescent lamps is a one-light machine of 3,000, and another of 50,000, candles on the Lane-Fox system, and four of 50,000 each on the Swan system. The large space under the eastern gallery is lighted by the same company with fifty-six lamps of 2,000 candles each; and the internal façade of the great hall is illumined by the same enterprising company.

The Gramme, Lontin, Siemens, Meritens, and other systems are displayed by the French Syndicate, and this part of the exhibition is remarkable for the elegance of form given to the lamps. The Edison lights occupy two *salons*, and are more particularly to be regarded as competing with gas for domestic illumination. Five hundred small incandescent lights are maintained by four small dynamo-electric machines driven by a 35-h.p. steam-engine. The greatest effort of this inventor is displayed in a combined steam-engine and generator of 150-h.p. on one bed-plate. This is to maintain 700 lamps on the great staircase, 500 more in the refreshment-rooms, 500 in one of the external gardens, and 500 in a theatre on the other side of the Champs Elysées. The weight of this monstrous development of the flint and steel of our boyhood is 17 tons. The magnets weigh between six and seven tons, and the armature, of 50 hundredweight, will make 350 revolutions in a minute. Its power is said to be adequate to maintain 1,200 lamps of 16-candle power, or 2,500 10-candle lamps.

A Siemens electrical machine, worked by an overhead conductor, is in course of erection between the Place de la Concorde and the eastern entrance of the Palace. It is intended to draw the ordinary street tram-cars by electric power. It is probable that a good scientic fight will be maintained between the advocates of this apparatus and those of the application of Faure's accumulator to the purpose of street traffic. Each of these methods, it seems to us, has its appropriate future. The erection of posts, wires, and overhead communications in a city, is, we take it, an offence against civilisation itself. For railway urban communication we have before expressed the anticipation that Mr. Siemens has a great future before him. For roadway communication, if the promises made by the *La Force et la Lumière* Company be carried out, we confess that our sympathy is with them. Forty of their 50-lb. cells are said to be capable of propelling an omnibus containing twenty-four passengers for three hours, and the cost of recharging a battery is stated to be 2½d., with the expectation of a reduction. We think that very little has yet been communicated to the public as to the secret of the Faure battery, and that a brief explanation of its principle of action will be acceptable to our readers.

In the store-cell of M. Faure, the attraction of chemical affinity is subtly balanced against mechanical force. The materials employed are, lead and that remarkable mixture of equal parts of the protoxide and sesquioxide of lead which, as first procured from a red earth occurring on the banks of that Spanish river to which the Romans gave the name of the Minius, is called Minium. This compound body is easily induced to act in a double way,—drawing in more oxygen to the under-oxidised constituent, and giving forth oxygen from its more fully oxidised element. It is here that the essential difference between the Faure battery and the Leyden battery is found. The latter, whatever its power, is instantaneously and wholly discharged when connexion is made between the poles. The latter is susceptible of gradual and controllable discharge.

The form of this battery is that of two plates of lead, each of which is coated with minium, covered with porous felt, and rolled in a spiral scroll. The two scrolls are placed side by side in a vessel of acidulated water, a strip of lead being left projecting to allow of the completion of the metallic circuit. When these strips are brought into communication with the wires of a battery, or dynamo-machine, a chemical action begins. The red lead on the plate at the positive end of the battery becomes more highly charged with oxygen, and its under-oxidised portion is converted into a peroxide. At the same time the more highly-oxidised element in the plate connected with the negative pole is reduced to the state of pure metallic unoxidised lead. This action continues until all the red lead on the one plate has been fully oxidised, when the battery is said to be charged. If the couple of leaden strips be now connected so as to form a circuit of their own, without any exciter of electricity being included, the reverse action sets in. A current of voltaic electricity is excited, and flows in the return direction, oxidising the metallic lead on the negative plate, by the oxygen which escapes from the overcharged coating of the positive plate. Thus the dynamic energy is reversed, the static chemical force is released, and a power is made available which can be gradually drawn off for the purposes of motor force. We are not aware that any good account of this delicate apparatus has been hitherto given to the public in this country, except in a short and admirable article in the July number of the *Edinburgh Review*.

THE FATAL RAILWAY COLLISION AT BLACKBURN.

It will be within the remembrance of many of our readers that, on repeated occasions, when railway inspectors and juries sitting on railway fatalities have been urgent as to the provisions of brakes that could bring a train to a standstill within comparatively a few yards, we have pointed out that a new source of danger might possibly lurk in this effort to secure greater safety. Not that we at all undervalued the importance of providing every train with an appliance which, under certain circumstances, might prevent very terrible disaster. But we foresaw that there was a dilemma to be feared, in consequence of the introduction of automatic, or very powerful, brakes. If this appliance were reserved for use in time of danger, there was the risk of its having got out of order, and thus being inapplicable when required. If, on the other hand, it were used for the ordinary working of the train, not only was there the risk of throwing an unnecessarily destructive stress both on vehicles and on the permanent way, but the possible danger incurred was even more serious, from our point of view, than the increase of cost. For the application of a brake that would bring up a train in its own length to the purpose of that gradual stoppage on nearing a station to which we have been accustomed, was hardly to be anticipated. Nor would such a use of the apparatus altogether guarantee its efficiency under stress. It was, therefore, to be feared that the engine-driver would drift into the practice of running at full speed to within a very short

distance of the stations, relying on the great brake-power to bring him up. In this case, from our point of view, a great and unnecessary risk would be incurred in the working of every line when the brakes were thus used,—a risk that would increase as the wear and tear of working rendered the appliances more liable to get out of order.

The truth of this view has been fatally proved by the catastrophe at Blackburn Station on the 8th of August. The Liverpool train reaching Blackburn at 3.6 p.m. brings a number of passengers from Scotland in a Midland composite carriage, which is detached from that train and attached to the Manchester express at that station. On the 8th, the Liverpool train duly arrived, and took up its proper place on the up-line at the further end of the station. An engine was also in waiting to shunt the composite carriage from one train to the other. All seems to have been in order, when suddenly the Manchester express dashed at full speed into the station. The accounts published all agree in the incredible statement that it was the intention of the engine-driver to stop the train by the Westinghouse brake within twenty or thirty yards of the station. We trust that it will turn out that this is a gross exaggeration. The train was approaching the station, not under steam, but under the influence of gravity. At whatever speed it was running, and wherever it was attempted to apply the brakes, the latter failed to act. According to the evidence of one passenger, there had been a jolting in the train during the journey on the former occasions on which the brakes had been applied, which indicated that something was out of order. It is quite possible that the engine-driver, standing on the foot-plate of a ponderous engine, might have been unaware of such a significant warning. But of what use are guards in running trains, if they do not call the attention of the driver to a symptom of danger of so serious a nature?

We trust that the mechanical details of the case will be fully brought out at the inquest, for which, unfortunately, there will be but too much occasion. The weight of the engine and tender, the number and weight of the carriages in the train, the speed of running, the point at which, according to the regulations of the company, it was proper to put on the brakes, should all be definitively ascertained. It should be remembered that the velocity of thirty miles an hour is equal to 44 ft. per second. We may take 166 tons as an approximate weight for train and engine. The force developed by that weight at that speed is 7,304 foot tons, and such would be the dynamical value of the blow given on a sudden stoppage of the train. To propose to effect this within the length of the train itself, except on occasions of the most urgent and obvious danger, is to incur a risk of a frightful nature. On this occasion, too, it was shown that the force of impact may be transmitted through an intermediate body, to a third body, which will then be propelled almost like a ball from a gun. The Manchester engine, striking the shunting engine, caused and inflicted such mutual damage that the two ponderous machines were locked together, and held down to the ground. But the force of the blow was transmitted to the carriage attached to the shunting engine. It is not stated whether this was coupled or not. In the former case the coupling-iron must have been broken by the shock. In any case the carriage was shot forward on the rails by the force of the blow, and propelled into the Liverpool train, of which it wrecked four of the carriages, with fatal and destructive results to numerous passengers.

The collision is one, as far as our memory may be trusted, of an unprecedented kind. The action of a single carriage as a sort of projectile has never, we think, been so frightfully illustrated. The points to which the circumstances of the case call the attention of the engineer are the effects of the difference in weight of the locomotive and the other vehicles in the train, and the importance of keeping the controlling power attached to the heaviest body in the moving mass. The short distance within which the trains of the Metropolitan Railway are brought to rest from a very rapid speed is due to the great comparative weight of the engines, and the application of brake power to this controlling weight, as well as to dragging the train. The Metropolitan engines were designed with this view. The cost of such sudden and numerous stoppages is very great, and wear and tear of engines and vehicles, as well as of permanent way, is proportionately heavy, as compared with other lines. But there was no choice for the engineer in this case. Unless the stoppages and startings could have been made almost immediate, only an omnibus rate of speed could have been obtained on the underground line. As it is, the speed between the termini is brought down to something like 12 or 14 miles an hour, while the running speed is as high as 45 miles an hour. Here, then, was a special problem, which was ably solved by the engineer of the line. But to take the mode of working which, though disadvantageous, was necessary in this particular case, and to apply it to a trunk line conveying long and heavy trains, and with stations at ordinary distances apart, is a plagiarism of an indefensible kind, likely to be attended with fatal consequences. In the present case, such consequences resulted. Whatever be the detailed replies to be elicited to the important questions that we have above indicated, this much seems sure. It was the habit on this railway to approach an important station without a proper retardation of speed, relying on the use of powerful and destructive brakes for the safety of life and limb. We do not hesitate to say that this should be directly prohibited, and that by Act of Parliament, if the power of the Board of Trade be insufficient to deal with the evil. The railway companies allege that the speed at which they travel is demanded by the public. No investigation, however, has been made on this point. Nor do we think that the public would be prepared to purchase a slight saving in time on a long journey at the cost of personal risk in approaching every station. Such a risk we pointed out as likely to occur from placing too much reliance on the brake. Unfortunately our warning has proved too true. We take the occasion of repeating it, and of accentuating the repetition by calling attention to the fact that for every 10,000 or 20,000 miles run by carriages fitted with complex brake apparatus the chance of disorder or wear in that apparatus will increase. Of course, it will increase in proportion to the number of times that stress is thrown upon the apparatus, as well as in proportion to the mileage run. Whatever precautions, then, may be necessary, in order to insure the readiness of powerful brakes to act in case of danger, their use, in the ordinary traffic, for very rapid arrest of the motion of the trains, should be altogether prohibited.

ALFRED W. MORANT, M. INST. C.E., F.S.A., F.G.S.

The death of Mr. Morant, Borough Engineer to the Corporation of Leeds, occurred about one o'clock on Thursday morning, the 28th of July, at his residence, 33, Virginia-road, Leeds. For some months his health had been in a very unsatisfactory state, when about the middle of June, availing himself of a fortnight's holiday, he visited Bridlington; returned greatly refreshed, and feeling himself equal to the task, went to Birmingham for the 7th, 8th, and 9th, to hand over to his successor the Presidency of the Association of Municipal and Sanitary Engineers and Surveyors, which he had held for the customary twelvemonth; returned home greatly fatigued; and showing symptoms of a complicated character, he became confined to his bed, where for a fortnight he patiently endured the progress of the disease, the result of an attack of diabetes about seventeen years previously, which has apparently been gradually undermining his otherwise strong constitution.

Mr. Morant was the eldest son of a second family of George Morant, of Old Bond-street and Wimpole-street, not only a highly-esteemed Decorator, during the best part of the first half of the present century, but a great encourager of art; he was, with his eldest son, George John Morant, on the first Council of the "Art-Union of London." Augustus, Alfred's younger brother, was educated to the profession of architecture, and died early in life; a notice of him appeared in our volume for 1863. Morant, born 17th May, 1828, was, after the usual school education, placed as a pupil for five years (1845-50) with the late Mr. James Simpson, past-president of the Institution of Civil Engineers, and thus was enabled to obtain thorough practical experience in such extensive undertakings as the large waterworks at Liverpool, Newcastle-on-Tyne, York, Bristol, Carlisle, and many other places, besides the Hartlepool Docks, Southend pier, &c. He then served five years (1850-55) as assistant engineer to Mr. J. G. Lynde, who was at that time engaged on Parliamentary and other work, acting for him in surveying and in charge of works, especially as resident engineer during the construction of the water-works at Great Yarmouth and at Lowestoft. They were completed in 1855. Mr. Morant was appointed, February 14, 1856, surveyor to the Corporation of Great Yarmouth, as well as to the Local Board of Health. He continued to perform the duties of the offices for about eight years, during which period he designed and carried out a Sea-wall and Marine Parade extending the entire frontage of the town, for more than two miles from north to south; developments and improvements of the general drainage system of the borough; superintending the very large Corporation estates, comprising nearly all the modern town, and also laid out for building a portion of their estate in the North Denes; he also made a detailed map of the estates, and with the Town Clerk prepared the reference-book and rent-roll, a work of great labour, but giving great satisfaction. He introduced most important improvements in the system of scavenging, road-making, repairing, watering, &c, and other official trusts. One of the first works carried out in Yarmouth by Morant was the laying-out of the new cemetery for the Cemetery Committee, together with the boundary walls, gates, &c. He was also elected surveyor to the trustees of the Children's Hospital (usually styled the Charity Trustees), for whom he made a map showing clearly their two or three hundred properties and buildings, with abuttals, &c., and to some extent developed their estates. As surveyor to the Victoria Building Company, the owners of a large tract of land at the south end of the town, acquired from the Corporation, Morant laid out the bulk of that estate, forming the roads, drainage, &c., and in some instances prepared designs for the buildings to be erected thereon, being allowed by the terms of his appointment to carry on private practice. His most important engineering work was the design and superintendence of the Britannia Pier, for a local company. This is a substantial timber structure 750 ft. in length, the head of which is 60 ft. in diameter, and in about 35 ft. depth of water and a height of about 16 ft. above high water; the general width is 24 ft.; under the head is a fishing platform. The cost, including the Act of Parliament, was about 6,000l., and it was erected in about nine months, being opened in July, 1858. He carried out the completion of Britannia Terrace, a range of first-class houses facing the Parade; designed the Sailors' Home, new Record and Muniment Rooms, &c., at the Town-hall; large additions to the Great Yarmouth Workhouse; and many schools, villas, terraces, warehouse and business premises in the town and neighbourhood. With a mind peculiarly fitted by nature and study for archæological subjects, he carried out restorations to various churches, including those of Ormsby, Runham, Postwick, Witton, and Blundeston, and he also acted, until he left Yarmouth, as resident architect to the Committee for the Restoration of St. Nicholas Church, in conjunction with Mr. John P. Seddon; and he rendered valuable assistance to the late Mr. J. H. Hakewill, the architect of St. John's Church.

At the end of 1862, he was seized, whilst surveying, with the first symptoms of diabetes; this compelled him to send in his resignation, but so satisfied was the Corporation with his services, and so highly was he esteemed by the members individually, that a resolution was passed to keep open the office for a twelvemonth, the duties being performed by one of his assistants. Nevertheless, he prudently sold the extensive library of professional, antiquarian, and heraldic publications which he had collected in so great a number as eventually to require the erection of a room for their reception, and, breaking up his establishment, went over to Ireland for a thorough change, expecting to return (if at all) in a fortnight; but finding himself greatly benefited he stayed for about six weeks, seeing every place which he could reach by the railways. He then visited Norwich, when, finding his health sufficiently restored, he determined to stay there, and finally resigned his appointment at Great Yarmouth in November, 1864. In March, 1865, the Corporation at Norwich honoured him with the appointment of City Engineer, and from that time until towards the end of 1872 he was engaged in their service, performing all the duties appertaining to the office single-handed. He designed and carried out, between August, 1868, to the end of 1870, a complete system of high and low level inter-

cepting sewers, nearly all of which were built in tunnels excavated at depths varying from 20 ft. to 80 ft. below the surface. From the peculiar nature of the soil, and from the necessity of a portion of the sewers,—namely, about four and a quarter miles,—being required to be built many feet below the level of the springs, the undertaking became a work of great difficulty and hazard; the quantity of water met with in the excavations was so large that for a long time the steam-engines were pumping day and night, raising twenty million gallons per day. It was seen that the marsh land on the opposite side of the river was cracked, and on examination it was found that it was drained 9 ft. below the level of the water in the river; while also the wells were lowered, and stand-pipes, &c., had to be set up for a water supply to the inhabitants. In consequence of the failure of the contractor very shortly after the commencement of the works, Mr. Morant undertook the contractor's work on behalf of the Corporation, and it devolved upon him to employ men, purchase materials, and to personally arrange and superintend all details to the completion of the works. This entailed night service in addition to the daily duties of his other departments, at a salary of 400*l.* per annum! The sewage requirements involved the erection of a large pumping station at Trowse, at the lower end of the town, costing about 15,000*l.*, with a rising main to a farm situated on a high level at Kirby and Whitlingham, about three miles from the market-place, and consisting of 1,300 acres, of which about 100 acres were prepared by him for irrigation with the sewage. He formed a self-acting system arranged upon Bateman's "leaping weir," by which in storms the flood-waters would flow into the river. Added to these works, he had to find out all the property undrained, and to connect the various houses with the sewers. A description of this extensive and laborious undertaking was communicated to the journal *Engineering* of October 21, 1870, vol. x., pp. 297-8, through a friend who had inspected some portions of the works during progress, for Morant was always averse to putting his own merits into print; and, though often requested, could never undertake to write a scientific description of the scheme. He also acted as sanitary officer to the Board of Health, "giving his cheerful and untiring attention to the duties devolving upon him during the terrible scourge (small-pox with English cholera) in 1871." Amongst his private professional works, he designed a mausoleum for Dr. Cooper, in which that gentleman was buried in 1878, in a suit of black clothes, &c., as directed in his will.

In December, 1872, he was persuaded by his friends to compete for the office of borough engineer and surveyor to the Corporation at Leeds, the salary offered being 600*l.* per annum; this he eventually obtained. Having, therefore, necessarily to remove, he sold to the Leeds Corporation, for the newly-established city library, the bulk of the library which he had again collected at Norwich, and for which he had again built a large room, attached to the additions at first made by him to a small villa situated in Plumstead-road, outside the city, taking the remainder of the books with him to his new residence. The Sewage Works at Knostrop, designed in 1872 by Mr. Thomas Wilson, engineer to the A B C Company, in conjunction with Mr. A. M. Fowler, at that time Borough Surveyor of Leeds, had been commenced, but only included a small part of the works as now in operation. All the special fittings and appliances, so as to enable the works to be used for any of the various systems tried, the tramways, drying-sheds and machinery, offices, workmen's cottages, and the large settling-pond, were carried out by Mr. Morant, who erected at Burmantofts and Armley-road two of Fryer's patent refuse-destructors at a cost of about 4,500*l.* each. The "Minutes of the Proceedings of Municipal and Sanitary Engineers, 1876," contain Morant's "Description of the Leeds Sewage Works, and of the Various Processes which have been tried for the Purification of the Sewage," which was also published as a pamphlet of twenty pages. The systems of Drainage for Headingley and Meanwood, involving a tunnel 2,350 ft. in length, were carried out in 1877. That of Chapel Allerton, Moor Allerton, and Roundhay, Bramley, and Kirkstall required three crossings of the river Aire by inverted syphons, once over the Leeds and Liverpool Canal by a pipe bridge, and tunnelling under the Kirkstall Railway Station of the Midland Railway. The Hunslet low-level sewer required syphons under the Canal and River Aire and under the Midland Railway by a syphon. In connexion with the widening of the drainage areas, the necessity arose for larger sewers or other means of getting rid of the storm-waters. This Mr. Morant met by constructing storm overflows at all available points, and of various types; a "leaping weir" is so formed that the normal flow drops into the main sewer, but when exceptional in quantity it leaps the opening and flows down the overflow. This instance of its use, with that at Norwich, is believed to be the first in sewage works. The ventilation of sewers was strongly advocated by Mr. Morant both at Norwich and at Leeds. A few ventilators had been tried at Leeds, but great complaints were made regarding the smell. These he met by making more openings, and thus causing a greater circulation in the sewers of fresh air; the result being almost unqualified success, the complaints became few, and, when investigated, usually proved to have a local cause. In Morant's "Inaugural address," as president of the association above mentioned, he referred to the expenditure upon works affecting the health of the town amounting to 1,829,000*l.*, which he considered was money well spent, as the death-rate had considerably decreased. In one year seventeen miles of sewer works had been constructed, the total length of the sewers within the borough being then 187 miles, all of which were freely ventilated by means of open gratings and gullies, of which there are now about 20,000. At an inquiry held at Exeter a few weeks since, Mr. Robert Rawlinson, C.B., stated that "the sewers of Leeds are better ventilated than those of any town in England." The "Address" above referred to has been stated to be a most able exposition of engineering and sanitary science with reference to the departments connected with the Leeds Corporation, and was published in 1880 as a pamphlet of seventeen pages, and also in the *Leeds Mercury* of the 28th of May, 1880.

The Kirkgate Market extension, 1875—1879, consists of the fish-market, 2,200 ft. long by 50 ft. wide, with brick walls and arched iron roof, and under it a complete system of ice and fish cellars. Ninety shops in blocks of six each, a row of eleven wholesale shops, and two rows of five each, either wholesale or retail; a market for eggs and butter; an open square for garden produce; with residence and weigh-office, covered pig-market, open hay and straw market, and a new gallery with shops round the existing covered market, the whole costing about 50,000*l.* The principal street improvements carried out under Morant's directions are School-close, East-street, York-street, Domestic-street, Strut-lane, Hunslet-lane, Hunslet-road, and Swingate. He took an especial interest in the By-laws for Buildings, which had to be altered occasionally to meet the growing requirements of the borough; they were rigorously enforced. An improvement as regards paving due to him is that of making the foot paving level with the road-paving at all crossings. He laid out and formed the roads and drainage of the Roundhay Park estate, arranging the lots for sale, erecting the lodges, &c., at a cost of at least 30,000*l.*, with later the new entrance, at a cost of 2,000*l.*; and widened, in 1872-3, the Wellington Bridge, a stone structure, originally designed by Thomas Telford, of one arch 100 ft. span, by building abutments 7 ft. in width on one side, and 14 ft. on the other; turning similar arches to that already executed, so as not to deviate from the original design, "a ticklish job," as he wrote, "the small width of 7 ft. being insufficient to give lateral stability; but I tied it in well." The bridge carrying the same road over the Leeds and Liverpool canal, was also widened at the same time; and the School Close Bridge, of brick, about 40 ft. span, partly on the skew, and springing below the water level, was carried out in 1875-76. The principal buildings are the police-stations at Sheepscar, 2,000*l.* (with branch library), Millgarth-street, Hunslet-road, 1,000*l.*; the Millgarth-street mortuary, several smaller police-stations, and plans for fire-brigade stations on various sites; with the re-plastering and decoration, with coloured tiles, for 6 ft. from the ground to all the corridors, and the granite lining to the vestibule, of the Town-hall, the original plastering having rotted from having been painted before it was dry; the ventilation of the Law Courts,—and it was by his strong recommendation, and under his superintendence, that Mr. Tobin first applied about 1874, his principle of ventilation to the police-court, effecting a thorough purification of the atmosphere without a draught, and rescuing its character from being the foulest court in England. In 1878, the large fountain he had erected in the market, was removed (1880) by him to the area in front of the Town-hall, involving the removal to one side of the area of the bronze statue of the Duke of Wellington. The central part of the fountain was first placed on rockwork, which has lately been removed, and the fountain lowered. He provided the platforms, galleries, &c., for the great Liberal demonstration of the 14th November, 1879, each to hold 1,000 persons, in a large engineering-shed, capable of holding 18,000 persons.

His latest work, and one now in progress, is the new road from Kirkstall-road to Armley. It consists of a brick and stone bridge, with two arches, each 41 ft. span and 45 ft. on the skew, over the river Aire; a viaduct of fourteen arches, each 26 ft. span; a retaining wall, 50 ft. in height, and outside a radius of 90 ft.; with an iron trussed bridge of 60 ft. span over the Leeds and Liverpool Canal. The difficulty of the work has been greatly enhanced by the great difference of 35 ft. in the levels of the river and of the canal, which are only thirty yards apart. When completed the gradients will be 1 in 32 and 1 in 77. The works are well advanced, the iron bridge being now in use. Among many of the schemes in contemplation, which had occupied his attention were,—a central fire-engine establishment and barrack, at an estimated cost of about 7,000*l.*; baths and washhouses, for about 10,000*l.*; and an abattoir; for in 1879 he attended a deputation on the occasion of its visit of inspection of those at Newcastle-on-Tyne, Berwick-upon-Tweed, Edinburgh, Dundee, Aberdeen, and Glasgow.

An anecdote, which Morant often mentioned, well illustrates his courage on an emergency. During the spring of 1879, a very cold one, he had to keep at work several hundred men in distress who were employed at small wages in road-making or anything else. One day seventy of them, being dissatified, went in a body to the town-hall and demanded to see the mayor, who deputed the borough engineer to meet them. He at once walked into their midst, asked for their spokesman, heard what they had to say, and sent them back to work. "By going right at them I got off all right, and they behaved very fairly; had I spoken from a staircase there would have been a row, but showing no fear satisfied them better." In 1877 Morant applied for a modest increase to his salary to 800*l.* per annum; and, as a proof of the high appreciation of his services and of the faithful discharge of his duties, the town council granted it without a dissentient voice.

These details of Morant's professional practice are, through the kindness of friends, the best obtainable. His varied labours, in leisure hours, in archæology and heraldry will now be described. His cousin, the late Mr. John W. Papworth, was from about 1845 engaged in the preparation of the now standard work, "The Ordinary of British Armorials." Morant, calling upon him, could not be idle, even in those early days: so while chatting, usually assisted him in cutting up and sorting the constantly-accumulating materials. Taken, or "bitten," as one may say, with the, to him, novel and interesting subject, he studied heraldry thoroughly, and taking up the severer and little known branch of foreign heraldry, prepared a "Dictionary" and an "Ordinary" on a corresponding plan, by purchasing books extensively and borrowing others relating to the subject, in the French, Italian, Spanish, German, and Dutch languages, and continued its formation up to the time of his death. Then about 1868-1871 he took Reitstap's "Armorial Général," published in 1861, a European "Burke's General Armory," and in a similar manner as done by Mr. Papworth, transposed it into a European Ordinary, [illegible] a parallel work with his first great manuscripts. These undertakings, always at the service of his friends, are comprised in a few words, but they convey no idea of the immensity of labour, care, and attention, in classification and arrangement, during a succession of years, performed by one mind without assistance. They, together with his continued entries into an interleaved copy of "Papworth's Ordinary," form a monument of industry and patient labour, and might have satisfied a reasonable person as a life's work.

Early in 1852 he translated the French text, and arranged the illustrations, for the two articles "Hipknob" and "Ridge," for the Architectural Publication Society, and to the "Dictionary" in later years he always willingly afforded the results of his experience. He drew out and published, 1854, "Sectional View of a First-rate Line-of-battle Ship with Screw Propeller." Joining the volunteer movement at its commencement, he rose to be Lieutenant of the 1st Norfolk Artillery Volunteer Corps (a Yarmouth corps), during which time he thoroughly investigated the subject of artillery, and delivered two lectures at the Corn-hall on the subject of "Ancient and Modern Guns," which were illustrated by very numerous diagrams specially prepared by himself showing the development of artillery from the earliest period. He took great pains that these illustrations, and the information given, should be accurate, and though the subject was necessarily technical, the attendances were good and the lectures highly appreciated. The corps rose to a high position, and it was with great glee and some complaint that on a certain day, practising with the great gun at a mark three miles off in the sea, it was destroyed at the first shot, and the day's duties in that respect put an end to. At Norwich, he joined the corps as an officer, and prepared and printed, in 1870, for the instruction of his men, a sheet showing the whole construction and nomenclature of a nine-pounder gun, its carriage, its limber, the shells, tubes, and line of firing. His men received high commendation from the inspecting officer at the examination following. As an enthusiastic student of Mediæval antiquities, he formed an "Archæological Chart" of Mediæval Art in England some 20 ft. long and 3 ft. wide, filled with tracings of the best examples. This was commenced at Great Yarmouth, and completed, if it could be so stated, of a work to which he was always adding, at Norwich. This gave him the foundation for a series of papers which were first printed in 1853, and enlarged and printed in 1870, in the *Architect* journal, entitled "Indications of Date"; they were reprinted as a pamphlet of forty-four pages.

After the decease of Mr. Papworth in 1870, numerous inquiries from the subscribers to his "Ordinary of British Armorials," as to the completion of that work, the printing of which had been commenced in 1857, induced a proposal from Mr. Morant to share with Mr. Wyatt Papworth in the publication of the remainder of the manuscript. This being arranged he took it in hand, and not only revised the unpublished portion of the manuscript for the press, but also added to it the materials left by Mr. Papworth, with extensive additions from the numerous sources in his own collection. This "labour of love," comprising 430 closely-printed pages, was completed faithfully and successfully in 1874. "As to giving up a thing when I once undertake it, no reasonable amount of trouble would ever make me do this," is one of the passages in an early letter on the subject, while adverting to his onerous professional duties preventing his progress being so rapid as he had desired.

Besides a large collection of tracings of constructions, and note-books for professional reference, there may be noticed amongst Morant's manuscripts and illustrated papers,—collections made by himself of monastic seals, of arms and armour, the peerages of Scotland and Ireland, Lord Mayors of London, various rolls of arms, and many other books too numerous to be more than noticed here, but proving his unremitting industry. His numerous additions to his copy of Burke's "General Armory" were gladly used in the new edition of 1879, as acknowledged by its editor and author. He has heavily noted "The Grammar of Heraldry" both with descriptions and illustrations. The "Glossary of Architecture" was even not neglected; and the last work he commenced in 1880, and was at work upon within a month of his death, was entering additional coats-of-arms into his interleaved copy of the new edition of Burke's "General Armory,"—"a very laborious job," as he himself describes it.

He occasionally complied with the wishes of local friends in preparing papers on antiquarian subjects. Among these may be named:—For the Norfolk and Norwich Archæological Society he wrote "Notices of the Church of St. Nicholas, Great Yarmouth"; communicated a paper by the late Rev. E. S. Taylor, entitled "Notice of Roman Coins and Antiquities found at Caistor-next-Yarmouth"; and, with Mr. J. L'Estrange, "Notices of the Church at Randworth." He made a plan of Skipton Castle, and from his personal examination supplied various details shown for the first time, on the occasion of the excursion in 1877 of the Yorkshire Archæological and Topographical Association; a paper "On the Abbey of Bury St. Edmund's," for the British Archæological Institution meeting in 1869 in that town; and in 1879 a paper on Kirkstall Abbey is also mentioned. He edited the third edition (1878) of Whitaker's "History and Antiquities of the Deanery of Craven," visiting all the places named, thoroughly revising the text, copying inscriptions and armorial bearings, obtaining additional information of the family genealogies, inserting additional plans and views, in a complete manner, and entirely to the satisfaction of the publisher, Mr. Dodgson, of Leeds, for whom also he edited the latest edition of the "Guide to Leeds," for 1879. He has formed a very nearly perfect collection of casts of monastic seals, and of army and navy medals, Greek and Roman coins, while many Mediæval antiquities also came within the scope of his treasures.

Mr. Morant was highly respected and esteemed in all the towns in which he had resided, not only in his official positions, but for his private worth and intellectual attainments. He thoroughly mastered the details of all the schemes and plans which he had to propose or to carry into execution. He was a good scholar in most matters antiquarian and archæological, painstaking and conscientious in his researches, most zealous in collecting information, and as ready to impart it. "As an authority in genealogical matters, on archæological buildings, and antiquarian subjects generally, he stood as one of the most eminent in Yorkshire," is the statement of one who had seen little of him, but had heard much. He was liberal to a fault, perhaps. To say he was never idle would convey a poor impression. He worked at his professional duties and for his pleasures day and night. Up at his desk by daylight, or out on his inspection duties at the water or sewage works at any time of the night, or writing during the evening and until the small hours of the morn, was his constant practice for many years. Even the partial failure of his left eye early in 1872 caused no cessation of work; the complaint of his family was, that they saw little of him unless they remained quiet in his library, where he was working surrounded by his books and papers. Even his "pleasure trips" for rest, and health, and ease to his eyes, were hurried journeys in the endeavour to see all that he could in the time. In April, 1875, to "give a few days' rest to head and eyes, which are so bad," he went to Ripon, and looked through the cathedral from the crypt upwards; next day to Studley Park and Fountains Abbey; next day over Richmond Castle and Easby Abbey; then on to Whitby, stopping there for three or four days. "You seem amused," he wrote, "at my going about sightseeing *for rest*, but can you imagine me absolutely resting? I could not do it; the change of scenery and freedom from compulsory work is the great thing." In August, having to visit the Yorkshire quarries, he visited Hartlepool, Sunderland, Durham, Newcastle, Tynemouth Priory, Warkworth Castle, Hexham, Carlisle, and back in a week. "Pretty good, was it not?" as he concludes his letter describing what he had seen. In August, 1879, he paid a visit to Yarmouth and Norwich for a real holiday, being, this time, "bent solely on quiet and fresh air," and wrote that the "visit was most delightful; I saw so many old friends who were kind beyond my expectations."

Morant was elected an Associate of the Institution of Civil Engineers on 7th February, 1854, and transferred to the class of members on 29th July, 1878; elected a member of the Geological Society in 1854; and a member of the Society of Antiquaries, 17th July, 1861. For a year he was vice-president of the Leeds Architectural Association, and, 1880–81, president of the Municipal Engineers and Surveyor's Association as above stated. He married young, and leaves a widow, three sons, and six daughters. He was buried on Monday, 1st August, in Woodhouse-lane Cemetery, at Leeds. The funeral *cortège* comprised, besides members of his family and friends, the Mayor, several of the councillors, and other gentlemen officially and socially connected with the deceased. It was met at the cemetery by nearly the whole of the members of the Corporation, members of the School Board, the Borough Coroner, officials from all the departmental offices of the Corporation, representatives of the building and other trades holding contracts under the Council, and a large number of local private friends. The coffin, which was of polished oak, was borne into the chapel and to the grave by four workmen as we understood at their own request. The tomb will be an offering from the assistants and others in his office.

WYATT PAPWORTH.

PARLIAMENT ON THE MUSEUMS.

LAST week, as we have already briefly said, there occurred one of those occasional fits of interest in matters relating to art which are not over-frequent in the House of Commons. It arose *àpropos* of the consideration of the Education Estimates, in regard to which Mr. Mundella made a lengthy statement, bristling with figures and statistics. None of these, however, bore any relation to the part played by art-teaching in our educational system, and it was perhaps partly to supply this gap that Mr. Collings proceeded to call attention to the importance of rendering aids to the study of art more accessible in the provinces, and not confining the voting of public money for museums and art-galleries to the three capitals,—London, Edinburgh, and Dublin. This question of the centralisation of art-museums, and its advantages and disadvantages, is a difficult one which is every now and then brought to the front again, as one or another member for a provincial constituency is moved with the feeling of his responsibility for the artistic culture of his constituents. The general tendency of Mr. Collings's speech was in favour of making money grants on behalf of the art-museums of provincial towns, instead of leaving them to find the funds for such institutions out of their rates. The amount of public money spent on such objects in London he considered was regarded in the provinces as out of all proportion to any benefit which the provincial artisan, who might get a day or two in London once in a twelvemonth, could derive from these great Metropolitan museums, and he warned the House in somewhat solemn tones that the provincial populations would not much longer be content with the crumbs which fell from the rich table in London. He also strongly urged the appointment of a permanent Minister of Public Instruction or Minister of Education, who should supervise all such institutions, and their working and expenditure, in a broad public spirit. Mr. Slagg, seconding the proposal, dwelt also on what might be done for the provinces by means of reproductions of original objects: a method of spreading artistic education which, we need hardly remind our readers, has already been to some extent made use of by the South Kensington authorities. Mr. Ecroyd followed in support. Mr. Maskelyne deprecated the idea of voting public money for any but central museums, asking where the line was to be drawn between towns which were thus to be subsidised and those which were to be denied: a somewhat pertinent question. Mr. Caine took another line, and while strongly upholding the claims of provincial towns to greater facilities in the study of art, believed that this might be much better accomplished by a system of lending and temporary distribution of objects belonging to central museums by circulation throughout the principal local ones. He considered the British Museum should have power to lend their objects, and suggested that it was believed there were a number of Turner drawings in the National Gallery hidden away out of sight for want of space to exhibit them, which might very well be lent to some principal provincial town, such as Liverpool, where they might be very glad to have them and to exhibit them. Mr. G. Howard averred that the Turner drawings referred to were more easily accessible than was supposed,—that they were so stored as to be easily examined on proper application, and that the National Gallery authorities cultivated a liberal spirit, and had recently recommended the loan of pictures to provincial galleries. Mr. Magniac took wider ground than any previous speaker; he would prefer to see the proposition they were discussing set aside for the present, in the hope that before long a large measure of reform would be passed, and that all the three great central institutions in London would be brought under one governing head and compelled to work to one end. The first thing such a governing authority should do would be to classify all the treasures in our three museums; not to leave engravings at the British Museum and pictures at the National Gallery,

but to bring together into one building the classes of objects which had affinity to one another and threw light on each other, and which students wished to study together. He considered that when that was done we might say that we had a National Art Museum; that at present we had not. "The appointment of such a central authority would be a remedy for the state of chaos in which some of our museums were placed by bequests and gifts of objects of Classical and Mediæval antiquity, and objects of art and of natural science, which were left or presented on the condition they should all be kept in one place. Probably the objection of testators to the unnecessary dispersal of their collections would be removed if they knew that the objects they bequeathed would be distributed in suitable quarters by a responsible central authority." This, we may observe, we are by no means so sure of. People who have made a large collection of any class of valuable objects, especially if it is a collection which successive generations in a family have kept up and added to, have a natural and pardonable feeling of personal pride about it, and like, if they give it to the nation, to do so in such a way that it may be a memorial of the labour of those who collected it. We do not say they would not show a higher public spirit if they desired that the collection should be distributed so as to render the most instruction to the largest number of people; but still the other feeling is natural, and its existence must be taken into account. But this is by the way. The point of Mr. Magniac's speech (a very sensible and comprehensive one) was that when once such a general Government over the museums was appointed, the system of circulation of works by loan to the provinces, now in part carried out very usefully by the South Kensington Museum, could be further extended and made equally applicable to the National Gallery and to the British Museum, the latter of which was not only excused, but, by its constitution, absolutely debarred from lending anything out of its walls.

It would appear, from this brief summary of the discussion, that while most of the speakers were agreed in thinking that more should be done for the provinces, the division between them was as to whether it should be done by grants of money or by increasing the loan system and extending it to the National Gallery and the British Museum. Now in regard to grants of public money to provincial towns for art museums, we must say that as a general rule (to which there may certainly be exceptional cases) we are disposed to think that the balance of arguments is against the use of public money in supplying local needs of this kind, strongly as we have for years urged the importance of establishing museums and galleries of art in our large provincial towns. We have already noticed the question raised by one member, "Where is it to stop?" and to that there is no satisfactory reply. It would hardly be possible to draw any line between one provincial town and another in this respect; subsidise an art museum for one, and it will be a standing grievance with every other town if it is not treated in the same way. Thus a large expenditure would be inevitable; and we do not see that a large expenditure of public money for such a purpose is reasonable except for what is of value to the nation at large, *i.e.*, for central and national institutions. But there is another consideration following on this, which Mr. Magniac half hinted at in his speech. Persons busied in acquiring objects of art always, he said, hated each other as rival collectors, and all the provincial towns would be placed in this invidious position. This might be got over by the suggestion of Mr. Collings, that the purchases should be authorised by South Kensington; but that does not dispose of the whole difficulty. It must be remembered that, after all, the amount of objects of art worth purchasing and keeping in a collection is not unlimited, especially if we take out the immense number which are never likely to be offered for public sale. The Government might give provincial bodies money with which to purchase objects of art and archæology, but it cannot do anything to enlarge the number of purchasable works of art that are worth giving money for. If the loan system were extended, however, a considerable number of objects might profitably be added, at public cost, to a collection which would then be shown in different places successively, and would become of more than merely local interest; and certainly the temporary possession of first-rate works is far more valuable and useful than the permanent possession of works of less value and excellence.

We by no means think, however, that the circulation system should be applied wholesale, or nearly so, to the majority of objects in the central museums of art. In the first place, there is great danger of loss or damage in sending such things from one place to another. In the case of the British Museum, for instance, we would on no account allow of the circulation of the more rare and valuable antiquities, such as, once lost, are lost for ever. Things of lesser value, or of which there were duplicate specimens, might be lent, and the system of making casts and *fac-similes* might be carried still further than it is already at South Kensington. But when people talk of sending things of this kind about the country from one place to another, they do not remember that, besides the risk of damage, the visitors to the Central National Museum (many from the provinces and distant parts of the world) have a right to expect to find that exhibition complete in all essentials, and not find it shorn of some of its chief specimens. In short, a national art museum is an institution which ought to be kept up in preference to local museums, and should naturally and rightly have the first consideration. Mr. Mundella observed, we have no doubt with truth, in replying to some of these suggestions, that there were already not unfrequent complaints from visitors to South Kensington who found that some of the things they had specially come to study had "gone into the country."

With regard to the far larger view suggested by Mr. Magniac, that the whole of the great national museums should be under one responsible head, and should be grouped in regard to the relation of their subjects to one another, while it would be unquestionably an immense task to accomplish, it would certainly be worth doing if it could be done without rendering a great portion of the contents of the museums inaccessible for a long time, and without rearranging and almost rebuilding, or largely adding to, the buildings containing them. But general re-grouping would, we fear, entail all this. The union of the whole under one Government Minister is quite possible, and would probably be of much benefit, more especially, as we venture to think, in breaking through some of the red tape of the British Museum, and compelling the authorities to do more to make the Museum, or some parts of it, generally useful. The state of mind habitual to British Museum Trustees and officials is significantly indicated in Sir John Lubbock's remark in the debate in question, in reply to a suggestion that the British Museum ought to have applied for Parliamentary powers to place some parts of their collection (such as the contents of the Print Room), where they would be of more general use to art students than where they are, and also for powers to lend works generally. Whereunto Sir John Lubbock, speaking, we presume, as a trustee of the British Museum, asks indignantly how it is to be expected that they are to ask for powers to alienate some of their greatest treasures? That is just a specimen of the singular illusion that some of the British Museum officials seem to labour under, that the British Museum is an institution existing for their particular honour and glory, and only for the public in a secondary and in a kind of "on sufferance" fashion. It is really as well that both trustees and officials should be reminded that the British Museum exists for the public, and that if it were proved that any part of its contents would be of more public utility elsewhere, their first duty would be to promote the change, not to oppose it as if the objects were property of their own, of which some one was seeking to deprive them.

Exhibition in Bolton.—The Earl of Bradford has consented to open the Fine Art Exhibition, in aid of the funds of the new infirmary at Bolton, on the 5th of September next. The infirmary building has recently been erected at a cost of 25,000*l.*, and is well adapted for the purposes of an exhibition of paintings and works of art. The Exhibition Committee have already been successful in obtaining the loan of a large number of very important and choice works of art, including more than forty pieces of sculpture, and a collection of bronzes, art pottery, and ancient armour.

MONUMENTS AND LOCAL MEMORIES.

The best locality for a monument, using the word in its primary acceptation of an architectural memorial of the dead, is a question that has been forced on our consideration by a recent loss to the world of letters. It is consistent with the simplicity of the character of Mr. Carlyle that he should have wished his remains to be laid to rest, near those of his wife, in the country churchyard of St. Fechan, in Ecclefechan. To his name there is no one who would have denied the right of inscription on the walls of Westminster Abbey. It remains, however, for consideration (if we are, indeed, justified in looking forward to a long and brilliant succession of great Englishmen) whether, even in exceptional cases such as his, the erection of a tablet should not be allowed to supersede the digging of a grave within the precincts of the Abbey. With the change that has come over public feeling (as well as public opinion) as to the evil practice of intramural interment, each applicant for a resting-place beneath the vaulted roofs of the minster founded by the Confessor must be regarded as more and more inadmissible; and that not for his own lack of merit, but from the physical conditions of the case. Room is limited, and each demand for space leaves a smaller space for the next demand. Room, indeed, is also limited for tablets or works of sculpture; but in this case the demand is usually more modest, and the available room is more ample. We look forward to the time when the walls of the cloister of Westminster Abbey shall be as attractive as those of the Campo Santo of Pisa; not from the treasured memorials of ancient art, but from the records they will offer of the names of the good, the great, and the lamented.

But let us keep to the instance now before us, because it is one as to which there will be no occasion for dispute as to the force of the claim. Tablet, statue, or memorial window to Carlyle we should gladly see erected in the Abbey. But that Great Britain would lose had his remains not been laid to rest in the country churchyard, there to be commemorated also by a suitable monument, we also feel. The two commemorations are not mutually exclusive; were it so, we should still hold that there was a truer pathos, if not a higher moral lesson, attaching to the local than to the public monument.

There is probably no uninspired writer who has so thoroughly grasped the idea that the history of a nation as of an age is the history of its greatest men, as did Carlyle. We used the adjective, not as either appreciative or depreciative of the Scottish writer, but simply as indicating, in passing, that this is a postulate underlying all our sacred writings. It is possible to reduce hero worship, like any form of idolatry, to the ridiculous, by sheer excess. But it would be difficult to attribute so much mischief to such an excess as is likely to spring from the reverse assumption from such popular teaching as that of the "History of the English People" and other works in which the force of public opinion, the influence of the masses, and the like are held up as the motive powers of history. We should perish with cold if we attempted to inhabit Mont Blanc. But as a feature in scenery, a poetic force and entity, what is the contrast between such a snow-clad peak and the "boggy syrtis" of the delta of the Nile? Thus for the training and elevation of the young, there is nothing like the history of great men. And their histories are at once made vocal and illustrated to the eye when we visit their cradles, their homes, their tombs. What is the difference of the effect produced by the statue of Shakespeare in the British Museum, compared with that of the bust at Stratford-on-Avon? The first is a fine work by a great sculptor; the second an ordinary bit of stone-cutting. Yet men go on a pilgrimage to see the latter, who are unaware of the existence of the former. It is at Stratford that we can best read our Shakspeare, and the hold of that great enchanter on the mind would, we venture to say, be somewhat less than it is if he were buried at Westminster. At all events, apart from the memory of the man, the charm and interest of a locality are enhanced by due memorials of its children. A monument which, in a country church, is an object of fascination, is reduced to very mean proportions in the companionship of a metropolitan Campo Santo. Whatever be the upshot of the contest between centralisers and decentralisers in matters political, let us remember that by the centralising objects of art we form not monuments, but museums. When

a man, or a painting, or a statue, is once ticketed and put upon the shelf, the next process is to forget him.

PRACTICAL RECLAMATION.

Recent discussions, to which this is not the place further to refer, as to the practicability or the reverse of reclamation on a large scale, have elicited some very valuable direct testimony from Mr. George Greig, who writes from Ochill Park, Bridge of Allan, as to reclamations begun in 1876 on Auchintoul Farm, Kinbrace, on the estate of the Duke of Sutherland.

For several years past works of reclamation have been in progress on his Grace's property, first at Lairg on Loch Shin, and subsequently at Kinbrace. The first were financially unsuccessful. The expenditure incurred in the Lairg works amounted to 100,000*l.*, in reclaiming 2,000 acres. This is at the rate of 50*l.* per acre, and the rental to be expected, viz., 1*l.* per acre, is manifestly inadequate to cover the outlay. But in this case,—as in so many others,—a large portion of the outlay has to be set down to the cost of education. Personal supervision of the requisite character was wanting, and there was a lack of experience in the use of steam cultivating apparatus. Since that time experience has done much to develope new and more effective implements, and consequently large saving has been effected.

Mr. Greig assumes the entire responsibility, as manager, of the reclamations commenced in 1876 on Auchintoul Farm, Kinbrace. The work has been in steady progress for more than four years, and when completed, next year, nearly 1,400 acres of land will have been reclaimed from the waste, and fully cultivated, at a total cost of 40,000*l.* This cost, moreover, includes not only trenching, draining, clearing, fencing, roads, houses, and lime, but also an outlay of 5*l.* per acre for fertilisers, work, and seeds in laying down the land as pasture. The price, little over 28*l.* per acre, or 23*l.* per acre for reclamation, *plus* 5*l.* per acre for getting in the first manured crop, contrasts very favourably with the expenditure at Lairg, of 50*l.* per acre. Nor are we left to mere paper calculations. In June, 1878, after 20,000*l.* had been expended on the work of reclamation at Kinbrace, the Duke of Sutherland had a formal offer made to him by one of the largest and most successful Scotch sheep farmers to take over the reclamations here made, to take over the extension of them to 3,000 acres, and, on these proving successful, to that of 2,000 acres more, paying a yearly rent for the same at the rate of 3 per cent. on the capital expended. A further proposal was to pay a rent of 7*s.* per sheep on the original capacity of the farm, and to back this offer to the amount of 3,000*l.* per annum rent.

Mr. Greig further points out that the greater part of the outlay on reclamation passes into the hands of the Duke of Sutherland's small tenants and crofters, and that a further sum goes to the Railway Company, of which his Grace is a principal shareholder. Since the passing of the Limited Liability Act, it is estimated that a sum of not less than 180,000,000*l.* has been speculatively invested in other countries and entirely lost. Here is a practical instance of the carrying out of our former recommendation as to lands that want hands. In 1880, out of 56,815,354 acres in Great Britain only 32,101,909 were under culture. Out of 20,819,947 acres in Ireland, 15,357,856 were under culture. Out of 25,968,286 persons living in England and Wales, 803,126, exclusive of vagrants, were in receipt of parochial relief. Here we have money that wants employment, hands that want employment, land that wants culture. Is it an insuperable problem to bring these mutually advantageous elements into relation?

The Growth of London in Streets and Houses.—The report of Lieutenant-Colonel Sir Edmund Henderson on the Metropolitan Police for the year 1880 has been presented to Parliament, and published as a Blue Book. In it Sir Edmund says that "no less than 24,945 new houses were built during the year, and the length of the new streets and squares opened and coming under the protection of the police was within a few yards of seventy miles. The number of new houses considerably exceeds those built in 1879, and is nearly three times as many as were built in 1871."

RAILWAY MOVEMENT OF 1880.

Although the "Railway Returns" for 1880 have not yet been issued by the Board of Trade,—a slackness of which the business world has great cause to complain,—we can set before our readers some of the main features of the movement, as ascertained from the "Statistical Abstract for the United Kingdom from 1866 to 1880," to which we have had occasion to refer for other information.

It may be most convenient to our readers if we place side by side the figures thus arrived at, and those of the "Railway Returns" for 1879.

Length of railways open in the United Kingdom:—

1879	17,696 miles.
1880	17,945 ,,

Total capital paid up in shares and loans:—

1879	£717,003,469
1880	728,621,657

Number of passengers conveyed (exclusive of season-ticket holders:—

1879	562,732,890
1880	603,834,752

Number of passengers per mile:—

1879	31,800
1880	33,652

Total traffic receipts:—

1879	£59,395,282
1880	61,958,754

Traffic receipts per mile:—

1879	£3,356
1880	3,453

Working expenses:—

1879	£32,015,273
1880	33,592,349

Net traffic receipts:—

1879	£29,731,430
1880	30,985,094

From the above official statements it may be calculated that the increase of the year is in the subjoined proportions:—

Length of line	1·4 per cent.
Capital	1·6 per cent.
Passengers	7·3 per cent.
,, per mile	5·7 per cent.
Traffic receipts	4·3 per cent.
,, per mile	2·8 per cent.
Working costs	4·5 per cent.
,, per cent. of income,	from 52 to 54 per cent.
Net traffic	4·2 per cent.
Proportion of net receipts to paid up capital, from 4·15 to 4·25 per cent.	

FROM LONDON TO LONDON.

Fully 4,000 miles from its ancient namesake, situated in the midst of what is, perhaps, the finest agricultural region in all Canada, is the little city of London, in the county of Middlesex, and in the province of Ontario. It lies a little north of Lake Erie, and somewhat east of Lake Huron, and is built upon the banks of a small stream called the Thames, a river thereabouts just as large as the English Thames is at Hampton Court. London has a bustling population variously computed at from 27,000 to 30,000 souls. It is 120 miles from the Niagara Falls, which lie due east of it, and about the same distance west is Detroit, which is a large and beautiful city, just across the river, upon the United States side. London contains some good streets, and numerous public buildings. Some of the thoroughfares are called after the best known ones in old London, and Westminster and Blackfriars bridges lead one across the narrow silver line of water they have dubbed the Thames. There are two railway-stations, the principal one a good building built of white brick. It is not a terminus, but an open station with wide platform, and the name London stuck up in the middle, in large letters. There are good waiting, washing, and refreshment rooms. Just outside the station is an immense hotel, built, as the station is, of white brick. It is known by the no means euphonious name of "Tecumseh House."

London contains several excellent hotels, especially so is Grigg's House, which, like Tecumseh House, is an hostel hard by the station. There the passing visitor may live "in clover," for as long as or as short a time as he likes, for the moderate cost of one dollar and a half a day (6*s.* 3*d.*). This charge includes everything. In Canada no gratuities are ever expected by "boots" or chambermaid. London in its railways has important connexions. Northward, *viâ* the Grand Trunk, it goes to St. Mary's, southward to Port Stanley, on Lake Erie; westward, to Petrolia, the oil centre; and to Port Sarnia, at the entrance of the St. Clair River into Lake Huron.

The building trade is brisk just now in London, and, indeed, throughout all Canada. The summer sun,—over 100° in the shade, very, very often,—is exceedingly trying, especially as in winter, I believe, the cold is intense; but, notwithstanding, the climate is a healthy one, and although one does not see the stout, jolly-looking men often met with in England, yet everybody looks hard and "wiry." Bricklayers just now are paid $2 50c. a day of ten hours (10*s.* 5*d.*); stonemasons, $2 50c. to $3 (10*s.* 5*d.* to 12*s.* 6*d.*); plasterers, $1 75c. to $2 (7*s.* 3*d.* to 8*s.* 4*d.*); joiners, $1 75c. (7*s.*); hodmen and labourers, $1 50c. (6*s.* 1*d.*). There are several firms of architects in the city. The one who seems to have the most practice is that of Messrs. Tracy & Durand. Mr. Tracy is the city engineer. Messrs. Craddock & Weekes, Peters & Son, and W. Jones also seem to do nice businesses. There are a score or more of building firms in the place. One may remark, passing by, that a glance at the "Directory" shows how the predominant names in England, are precisely as proportionably plentiful here. As mentioned above, the outside number of population the place contains is 30,000 folks, yet amongst them there are 160 householders rejoicing in the patronymic of Smith, whilst there are forty-six Mr. Joneses, and thirty-five Robinsons.

The principal job at present in hand is an exceedingly imposing block of buildings, known as the Masonic Hall. It stands at the corner of Richmond and King streets, and has also a plain back frontage toward the market-place. This building, which is in the freely-treated French-Classic style of architecture, is being erected from the designs of Messrs. Tracy & Durand. It is built of red brick, with stone dressings, and is of an ornate character. On the lower floor are shops, and over the first-floor windows will be a wide band of subject tiles. These are now being executed by Messrs. Minton in England. To the main entrance there are polished Scottish granite columns, and much well-carved detail is scattered over the two main façades of the edifice. The building is undoubtedly one of merit, but an eye fresh from England views with regret the sham galvanised iron,—what shall I call them?—dressings (!) that, upon close inspection, mar the good impressions made at a little distance. Galvanised iron takes a prominent part in the major portion of most colonial buildings. Upon this new Masonic Hall, for instance, all the top window fronts and the upper cornices, which at first sight look like solid masonry, consist of nothing in the world but galvanised iron, painted a light stone colour. Again, nearer the eye, just over the shops, is a cornice 2 ft. 6 in. deep, well moulded and elaborately carved. It runs round the building, and is apparently in brown stone; a glance, however, reveals the fact that all this detail is simply iron painted brown and sanded! The job is nearly complete, the contractors for the work being Messrs. Goldsmith & Parrett, bricklayers,—Mr. Goldsmith, who seems to have been much respected, died last March,—Mr. Mathieson, stonemason, Mr. Noble, painter, Mr. Mackintosh, plasterer, and Messrs. Green & Co., carpenters. Near to this building, a little higher up Richmond-street, three large wholesale stores are building. They are from the designs of Messrs. Peters & Son, architects, and are in white brick, with light coloured Ohio stone dressings. Mr. W. H. Peters, originally a Devonshire man from Honiton, is the clerk of works; this job is about half up. Amongst other works in hand is a good mansion in the Dufferin-avenue; Messrs. Craddock & Weekes are the architects. The cost of this building, which is just having its roof put on, will be about 10,000 dols. A club-house, in Queen's-avenue, is also in hand at a similar cost under Messrs. Tracy & Durand. These gentlemen have also a fine Baptist chapel erecting in Talbot-street. It will cost 12,000 dols., and from their designs a mansion in red brick and Cleveland stone dressings is being built for Mr. Cronyn, barrister-at-law. The probable cost of this house is from 20,000 dols. to 25,000 dols. Some good shops have just been built at the corner of King and Market streets.

The badness of the roads in Canada is proverbial, whilst the "side-walks," as they call the pavement, are worse still. These side-walks are not of stone flags, but formed entirely of 3 in. deal planks, generally laid parallel with the

houses, but sometimes at right angles thereto. In some cities in Canada these wooden pavements are much worse than others. At Quebec, for instance, the culminating point is reached, and my great wonder is that, from constantly putting their feet through holes in rotten boards, half the folks there do not break their ankles. The badness of the Quebec paving is so far recognised, that the Canadians themselves have a saying that "New side-walks are first fixed down at Toronto, when half-worn out they are taken to Montreal, and when entirely done for they are ready to transplant for use at Quebec!" A few of the streets, notably Richmond-street, which, crossing Dundas-street at right angles, forms with it the two main thoroughfares, have the side-walks macadamised. At present, under the direction of Mr. Tracy, the city engineer, or city surveyor, as we should say in England, wooden blocks are being laid down in Dundas-street; 12,000 ft. of it have been undertaken, the contractors being Messrs. Stevens, Turner, & Burns. A little street leading from Dundas-street to the Market-place, along which much traffic goes, was laid with blocks some time ago, and the treatment seems a great success; indeed, at Detroit and some other American towns, I believe, the blocks have long been in use. They are all 7 in. blocks, of course swamp cedar, laid endways of the grain upon river gravel and fine sand. The section the road-line is made to take is that of a wave mould,—a bold crown in the centre, with a sweeping gutter.

The Post-Office is a good building, and one of the best sites in the place is occupied by the Federal Bank of Canada, at the corner of Richmond and Dundas streets. They possess fine Gothic premises, built of brick and Cleveland stone. There are many fairly good churches and chapels, and upon the outside of the city are not a few handsome villas. The roads are laid out at right angles to each other, and are wide and commanding. The streets in the main part of the town are innocent of trees, but immediately the suburbs are gained long rows of lofty trees line either side, and with the thermometer at 102° in the shade, as it is at the moment these lines are written, offer a grateful shelter from the burning rays to the pedestrian. At night the city is well lighted by gas. The gas company have, I understand, great facilities for the manufacture of this commodity, so much so, that London is at present supplied with gas at about half the price of any other city in the Dominion. Along the main streets, double rows of telegraph-poles run. These are of huge proportions, 18 in. and more through at their base, and running 40 ft. or 50 ft. high. Upon the poles down Dundas-street thirty-four lines of wire run. Tram-cars are in great request, and seem to roll along everywhere. The uniform scale of charge, as elsewhere in the Dominion, is 5 cents. (2½d.). London possesses a fine public park, with a handsome band-stand in its centre.

Taking it altogether, the place is a thriving and prosperous city. The sad accident to the *Victoria*, some two months ago, when nearly 200 souls perished, filled every one with gloom, but that has passed now. I walked a mile down the river's banks, and meandered amongst the big trees at the spot where the catastrophe happened, and could scarcely realise how, in such a wee stream, not one whit, as mentioned before, larger than the Thames at Hampton Court, so many lives could have been lost. The Canadians are pre-eminently loyal, and London is in no way behind in this respect. A review took place the other day, at which I was present, wherein 2,000 volunteers took part, and very fine fellows many of them were.

The most interesting place in all London, perhaps, to the thoughtful and kindly-hearted Englishman is the Guthrie Home at Westminster. Westminster is a suburb two miles or less from the heart of the city, and there at the present moment are some 500 or 600 orphan children, all of them waifs and strays from Britain's capital, from Birmingham, and other large English towns. The children are brought over in batches of 100 or so, boys and girls, from three up to twelve years of age; they are well cared for, and are ultimately adopted out into comfortable families in this country, where they generally find happy homes.

Bound upon a holiday scamper through America, I crossed the Atlantic, a couple of months ago, in the steamship *Parisian*. Therein were between sixty and seventy of these dear children, under the care of Miss Blackhall, a lady who has already bravely and without a murmur faced the horrors of a steerage passage across the angry ocean more than a dozen times on similar missions of mercy. I can testify that during the nine days occupied by our voyage, no children could have been better behaved, none more loving, none more kindly and helpful to each other, than were these waifs, not long ago the scum of the streets, but now, thank God, warmly dressed, well fed, and happy juveniles. During the first few days, the weather being rather rough, they suffered considerably, and it was pitiably curious, if one may use the expression, to see them brought from below, and laid helpless, just in piles, one over another, upon the lee and sunny side of the ship. Very white-faced and dead-looking they were then; but a transformation soon took place: the sickliest child pulled up wonderfully, and ere we had accomplished one-third of our voyage, they were skipping (every little one was provided with a skipping-rope) everywhere, and singing Sankey and Moody's hymns. In fact, the happy laugh of these poor lambs was the sweetest music in all the ship, and fairly infected every one of the thousand souls who found within her a home for the time being. May God prosper the work in hand, and may many thousands of our poor city Arabs find a home in the new land that is ready and able to receive them.

I am not altogether prepared to say whether I can honestly recommend our working men generally to leave old England and come hither. At present I see the country under its best face. It is the month of July. Everything is bright and sunny, and the demand for all sorts of labour is greater than the supply. But I am reminded that the winters are long and severe; that for six months in the year employers too frequently "shut down," or, as we should say, "stop" all the out-door jobs, and then the men have to do the best they can. This set-off in the shape of intensely cold winters is a serious consideration,—especially for those engaged in out-door trades.

London lies upon a flat site; its men are sober, its young women very pretty, and everybody seems fairly prosperous. I have not seen in it a really poor person; nor a single house where squalor and abject poverty look out from the door. Possessing a fair acquaintance more or less with most towns in England, on reviewing them in my mind's eye, Southport, the new Lancashire watering-place, reminds me more than any other place in our own country of the well-to-do city I am now visiting.

My space is filled. From "London in the Bush" to "London in the Smoke" (that is how the good folks hereabouts define the two cities), I waft a kindly greeting! HARRY HEMS.

THE FRANKFURT PATENT AND TRADE-MARK EXHIBITION.

THE days are long gone by when Dannecker's much-admired Ariadne in the Bethmann Museum formed the principal attraction in Frankfurt for all travellers on the Continent. The sons and daughters of Albion especially made it a point to see that masterpiece of the eminent sculptor. At the present day there is something else to be seen and admired. Round the nucleus of the old imperial free-town of many-pointed gables have clustered quarters of palace-like mansions and suburbs of charming villas. At the western end we are invited by the Palmengarten and the rotunda of the Diorama (battle of Sedan), and in the east by the Zoological Gardens. The new Exchange rises behind the old theatre; the new Opera House, by Lucä, at the Bockenheim Gate; the Städel Institute (the picture gallery), on the other side of the Main, in Sachsenhausen. Next to the completed Cathedral, described on a former occasion in these columns, in one of the oldest parts of Frankfurt, we behold the new Städtische Archiv, erected in the Gothic style by the architect Denziger, with its imperial manuscripts and documents from the time of the Carlovingians, and the rich collections having reference to the past history of Frankfurt, all securely housed in the ground-floor.

To all those permanent sights and curiosities of the city, another has this year been added. We are referring to the Patent and Trade-mark Exhibition opened on the 1st of May, and now in the midst of its success. The attractions which it offers have caused thousands of visitors to Frankfurt this summer, numerous at all seasons, to direct their steps to the exhibition. "Steps" is only a figurative expression, for tram-cars and other vehicles shorten the distance very much, the buildings and gardens constituting the exhibition being outside the city. On the opening day it suffered from the chronic disease of all exhibitions, unreadiness; but, of course, it presents a very different picture now, and leaves nothing to be desired on the score of sight-seeing. Two arrangements in the gardens especially act as powerful magnets, and both are of Berlin descent: the excellent and well-known band of Bilse, and Siemens and Halske's electrical railway. The latter is never at a standstill; from the hour of opening to the time of closing most of the carriages are filled, and even the beholder looks upon it with interest, silently conjecturing what an important *rôle* this mysterious motor may yet be destined to play in the history of civilisation. Actuated by the same power, the electrical lift carries the curious to the top of the high tower, from the upper platform of which a splendid view is obtained of the city, the plains surrounding it, and the far and near hills enclosing the horizon. Another point of attraction is the large telescope, only recently completed. As far as we know, this is the first opportunity offered to the general public of observing the stars. It is unfortunate that this enjoyment cannot be so easily obtained as the others that may be had at the exhibition, for entrance to it is restricted to but few hours. The eagerness of the public for admittance is very great, and each one has to wait his turn. The visitor is here enabled, under the guidance of Dr. Harzer, the astronomer of Leipzig Observatory, to observe, from four to six in the afternoon, sun spots and protuberances, and, after the setting in of dark, lunar landscapes and stars *ad libitum*, or aspire to the discovery of new comets. It is reported that this valuable instrument, constructed by Dr. Schröder, of Oberursel, near Frankfurt, will probably be acquired for the city.

An exhibition of an exceptionally valuable nature is the historical exhibition of the Frankfurt Artists' Society, only lately opened. A small but charming Ionic temple rises between the grand entrance to the exhibition and the balneological exhibition, the columns and pediments of which have been chromatically decorated, conveying a pleasant impression to the beholder. One is astonished to find in this little building three large rooms, the walls and other spaces of which are covered with a number of oil and water-colour paintings, drawings, sketches, copper-plates, studies, and casts of sculpture, all works of Frankfurt artists, or such as have resided for a longer or shorter time in the city, amongst whom appear also Hans Holbein the Elder and Peter Cornelius. This exhibition of Frankfurt art thus comprises a series of brilliant names, such as Hans Sebald Beham, the Frankfurt artists' families of Merian and Roos, Theodor de Bry, Schütz, &c., down to the great masters of our time, Cornelius, Overbeck, Veith, Steinle, Schwind, and their disciples and successors, such as Leopold Bode and others. Of especial interest are two landscape drawings of Goethe's, lent by the Weimar Museum.

The chief ornament of the exhibition grounds is formed by what the Germans call "carpet-gardening," and for which Frankfurt is well known,—a style of gardening to which we in England, and London especially, have been long accustomed in our parks. An establishment devoted to enjoyment has only just been thrown open. It is a skating-rink of real ice. The great drought and consequent scarcity of water has been the cause of the delay. This ice saloon will probably be more an object of curiosity than of actual use, for only the most enthusiastic skater would voluntarily undergo the exertion involved in the hot season.

We have described the most salient points of attraction for the ordinary visitor to the Frankfurt Exhibition. It is now time to direct attention to its features of a more practical nature and of greater utility. If we look into the great boiler-house, we find there three boiler systems in operation. Messrs. Walther & Co., of Kalk, introduce Root's tubular boiler with patent tube joints and an ingenious steam-collecting apparatus. The second boiler used in driving the machinery of the exhibition, a MacNicol circulating boiler, is shown by Messrs. Hetzler, Kolb, & Karcher, of Beckingen on the Saar. The third boiler, also tubular, is by E. Willmann, of Dortmund. A criticism of the various systems is not possible until the results of the projected scientific and technical examinations are to hand;

but it may be generally remarked that in all three the makers have endeavoured to obtain a large heating surface on a small section by means of the tubular system, and thus to secure a free circulation of the water in the boiler, while no novelties have been introduced in the system of firing. A tubular boiler by Joseph Prégardien, of Deutz, which is not in operation, attracted last year at Düsseldorf favourable and well-deserved attention. In this division, the boiler for central low-pressure steam-heating exhibited by Ad. Bechem, of Hagen, also deserves notice, being suitable especially for warming private houses cheaply and uniformly.

Of particular technical interest are some boiler fittings, partly shown in operation; for instance, the automatic feed-apparatus of S. G. Cohnfeld, of Zaukeroda, and the feed-water heaters and injectors of Gebr. Körting, of Hanover. The exhibits of the latter firm in the patent section should not be overlooked, being interesting even to uninformed persons, demonstrating, as they do, in how many ways the well-known simple principle of the Körting injector has been applied to industrial and sanitary purposes. Besides the various injectors, the automatic railway brake of Sanders, of which a working model is shown in connexion with a Körting injector and suction apparatus, ought to be mentioned. The principle of this vacuum brake, which has been introduced on several German and English railways, and which has proved efficient especially in checking trains on gradients or in curves, is now pretty generally understood, but we may just mention for the benefit of those of our readers who are not thoroughly acquainted with its working that it consists in fixing on each carriage of the train brake cylinders the hollow spaces of which are kept in a state of vacuity, in consequence of which the brake-blocks are held away from the wheels. As soon as, by the opening of a stop-cock, the state of vacuity in the cylinders is either wholly or partially reduced, the brake-blocks are pressed with corresponding force against the wheels. By means of pipes along the whole length of the train, all the brake cylinders are momentarily brought to the same state, the engine-driver being enabled to regulate their vacuity, consequently also the force of the brake, by the aid of a vacuum meter fixed on the engine. In case of a rupture of a train the brake must, as a matter of course, act automatically; but, generally, no carriage can be checked independent of the action of the driver. The same firm show in the balneological section of the exhibition other very interesting applications of the principle of the injector.

If we take a further look into the patent section, the display made by another good firm, Messrs. Klein, Schanzlin, & Becker, of Frankenthal, awakens lively interest. We notice, in the first place, several steam-pumps, working very smoothly, of but modest dimensions, but of very great power, which raise the water for the exhibition. The same makers have also supplied for use during the exhibition an independent boiler feed-pump, with suction and delivery air-vessel in frame, in which the boiler-pressure amounts to ten atmospheres, and a coupled plunger-pump, with post serving as air-chamber, used as water-pump for the ice-machine. The two pumps exhibited at Frankfurt are provided with Klein's adjustable crank, very efficient in preserving a uniform motion. The capability of the two pumps will best be illustrated by stating that they raise 15,405 imperial gallons of water per hour to the height of the reservoir in the water-tower, 115 ft. from the ground. This water supplies the fountains, &c., and runs after use into a collecting basin, whence it is raised again and again to the water-tower by the Klein pumps. If the clackpiece is left out in these pumps, they still constitute a steam-engine useful for performing small work. These pumps also show the patent suction and delivery valve, of importance on account of the regular and steady action, and which has proved efficient in pumps both with slow and quick motion. The Klein self-tightening stopcocks, which do not leak, and are of greater durability than ordinary cocks, also deserve attention. Made of iron, they are very extensively used in chemical factories. The same Frankenthal firm likewise exhibits in action the Lux oil testing apparatus. This instrument is used for comparing different descriptions of oil with regard to their lubricating properties, a curved line drawn upon a paper cylinder giving an exact view of the lubricating property of oil for several hours. For railways and industrial establishments using much oil this testing apparatus is of no small value, especially as it shows at the same time which alloy is best suited for axle-bearings.

The Körner apparatus for consuming fire-damp by chemical means (shown by L. Frobeen, of Berlin) is a most ingenious arrangement. This apparatus consists principally of a Ligroin lamp, the chimneys of which are provided with asbestos caps. The asbestos is impregnated with platinum and palladium, so that the fire-damp is consumed without danger at the red-hot caps. This lamp is, at any rate, a most remarkable endeavour to render fire-damp, which plays such havoc in our coal-mines, innocuous in a chemical way, instead of, as hitherto, by physical means. The same firm exhibits two rock-drilling machines, in which air is compressed in a cylinder by turning the crank, which throws the drilling-bar forward, and at the same time revolves and pushes it on ahead. Another object worth notice is a feed-apparatus for air-chambers, and an ore stamp-mill. A very important and powerful apparatus for ventilating rooms is the turbine ventilator, with hydraulic power, which may also be made in the form of a stove with either pulsating or aspirating action.

We have thus brought our notice of the Patent and Trade-mark Exhibition now being held at Frankfurt to a conclusion, and drawn the attention of probable visitors from England to such sights and exhibits as ought not be overlooked by them. We have shown that the exhibition is in some respects a remarkable one, as is further evidenced by the fact that such an important body as the Society of German Engineers, which will hold its annual meeting (the twenty-fifth year of its existence having elapsed on May 12th last) at Stuttgart, from August 22nd to 25th, have thought it worth while to pay a preliminary visit this week to the exhibition before assembling at their trysting-place. The exhibition is a proof of the benefits conferred on the nation by the German Patent Law, which has been in operation only a few years. Another point of really practical importance, not to be overlooked, is that inventors will be enabled, through the opportunities given by the Exhibition Committee, to derive pecuniary profit from their inventions, that body having undertaken to be the disinterested medium between the inventive genius and the capitalist.

THE OLD JESUIT CHURCH AT MÜNSTER, WESTPHALIA.

The building of which we give an illustration at present serves as a chapel to the great Public School or Gymnasium at Münster. It was, however, formerly the Church of the Jesuits, and served both as a place of worship for the students attached to the great college of the order, and for externs who desired to attend the services and sermons held by the fathers within its walls.

The first stone of this interesting church was laid on the 3rd of June in the year 1590, and the building was completed nine years later.

It consists of a long nave and aisles terminating to the east in a single apse. The aisles are two stories in height, both vaulted, as is also the nave. The upper story or division of the aisles forms a large kind of triforium or gallery. This treatment is common to the churches of the Jesuit order, and is to be seen in their churches at Cologne, Aix-la-Chapelle, Dusseldorf, Coblentz, Würzburg, &c. The students of the colleges which were attached to these churches used the galleries, and the general public were accommodated with seats upon the ground floor.

As will be seen from the view which we publish, the architecture is a curious mixture of Third Pointed Gothic, with the revived Classic of the period. The general plan and arrangement belong entirely to the former style, as do also the vaulting, window tracery, buttresses, &c., whereas the doorways and cornices partake of the latter. There is, however, a much more distinct Gothic feeling about the building than its date would have led us to expect, and, singularly enough, this is the case with most of the earlier churches erected in Germany by the same order. Of course, one would naturally have expected to have found exactly the reverse the case; yet, strange to say, the Jesuits were very nearly reviving Gothic architecture in Germany. Their churches at Coblentz, Cologne, and Paderborn, all erected after the commencement of the seventeenth century, are, especially internally, thoroughly Gothic in character, and it is, perhaps, not too much to say that the Jesuit church at Cologne is the noblest Gothic church erected anywhere since the year 1600. Its precise date is 1621—1629, and whether we regard it as the last great expiring effort of Gothic architecture, or as a most remarkable effort at its revival, it is a building deserving of very careful study.

One point to which we wish to call attention is the construction of the vaultings of these Jesuit churches. They are probably the latest examples of Gothic vaults, and their builders had profited by the experiments and experiences of four centuries, and the result of this is the fact that these vaults appear to have no thrust. The walls of the clearstories of all the churches we have named are very thin and entirely without buttresses, though in the case of the church at Cologne the span of the vault is about 40 ft.! These vaults are composed of a rather acutely-pointed barrel-vault running from east to west, with lunettes cutting into it from north to south; the whole is covered with a rich network of ribs dividing it into triangular compartments. The spaces thus enclosed are exceedingly concave, so that each triangular space forms a kind of dome, and if a section be taken through the vault, except at the surface of the ribs, it will give the outline of a deeply-cusped arch, though the ribs all project to the face of what would in section be an acutely-pointed arch. At first we supposed that the vault was very much loaded, but a little examination proved this not to be the case, because these convex sinkings are continued right down almost to the cap of the vaulting shaft,—in fact, to the point where the ribs unite. The effect of this kind of vaulting is exceedingly ornamental, and its constructive excellence is shown by the fact that, although it rests upon remarkably thin walls, they are not affected (those of the church at Münster do not appear to be more than 2 ft. in thickness), and we could discover no crack, opening, or settlement. We should mention that the ribs are stone and the soffit of the vault is constructed of small red bricks covered with plaster. The vaulting-ribs are very deep and narrow, and their section is more like that of a window-mullion than what we are accustomed to see applied to a vaulting-rib; the bosses are large and adorned with shields.

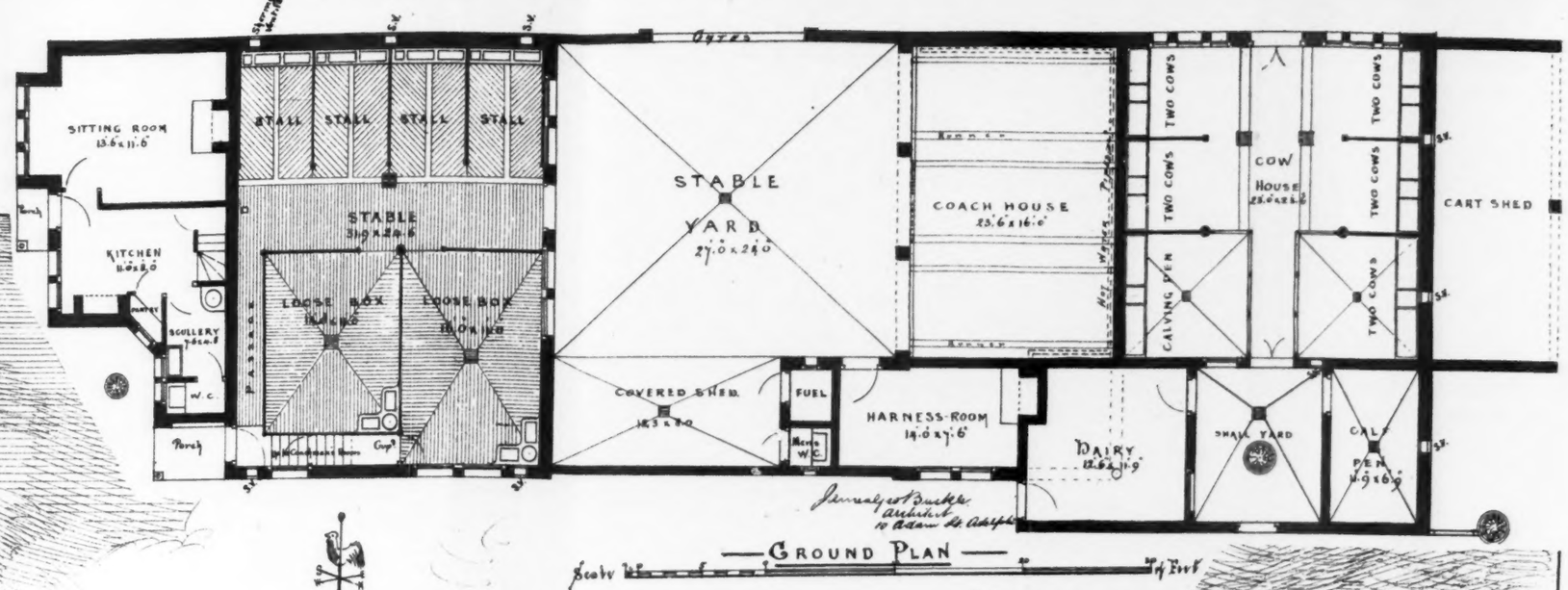
The fittings of the church at Münster, like those of all the other Gothic Jesuit churches we have seen, are quite Renaissance in character. The reredoses are well designed and piled up story over story in a very picturesque manner. Great attention appears to have been bestowed upon the doorways, which are remarkably pretty examples of "freely treated" Classic. The collegiate buildings attached to this church are in style very like our English Jacobean, and although slightly earlier in date than the church, retain far less Gothic treatment than does the church itself.

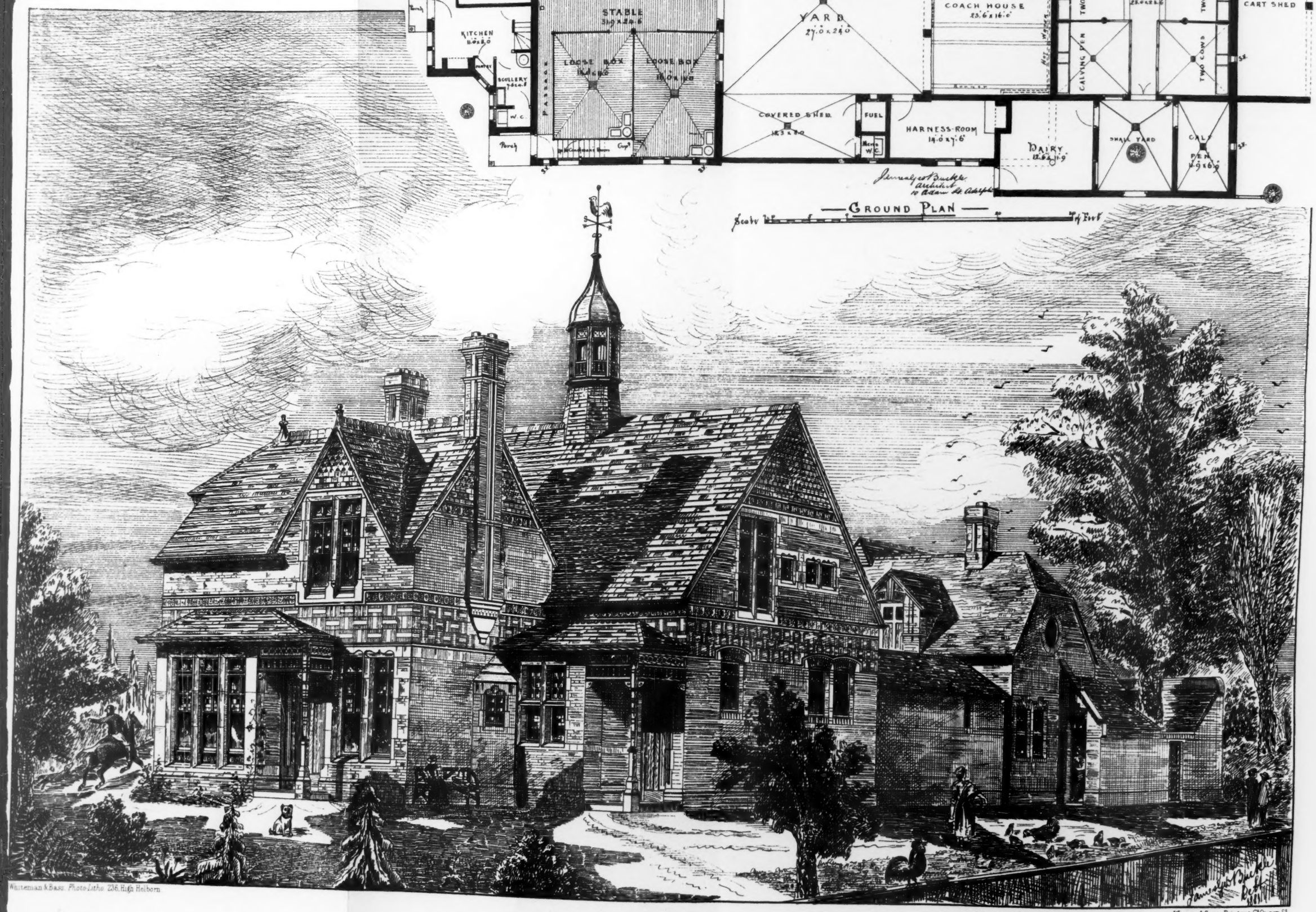
PARIS.

It is proposed to establish a retail provision market in the Temple quarter to replace the ancient market of St. Martin, which will be shortly suppressed. There is also a question as to the establishment of a new market in the Plaine Monceaux, where the number of recent buildings erected makes the provision of a new market a matter of urgency. The open-air market in the Avenue Wagram is found to be insufficient, especially for the wealthy classes who have lately come into this neighbourhood, and who are obliged to seek their provisions in the centre of Paris. Two sites have been suggested,—one at the angle of Rue Ampère and Rue Brémontier, the other at the angle of Rue Ampère and the Avenue Wagram.

The municipality, not having been able to agree with the owners of the property, will be compelled to obtain the site by compulsory purchase, which will delay for some time the carrying out of the work.

Literary Congress, Netherlands. — A literary Netherlands Congress is to be held at Breda on the 31st of August, continuing till the 3rd of September proximo. It will be composed of Dutch and Belgians. It is divided into three sections, viz.:—1. Netherland language and literature; 2. History and archæology; 3. Theatre, music, plastic arts, and library. A committee has been appointed for the management of this business.

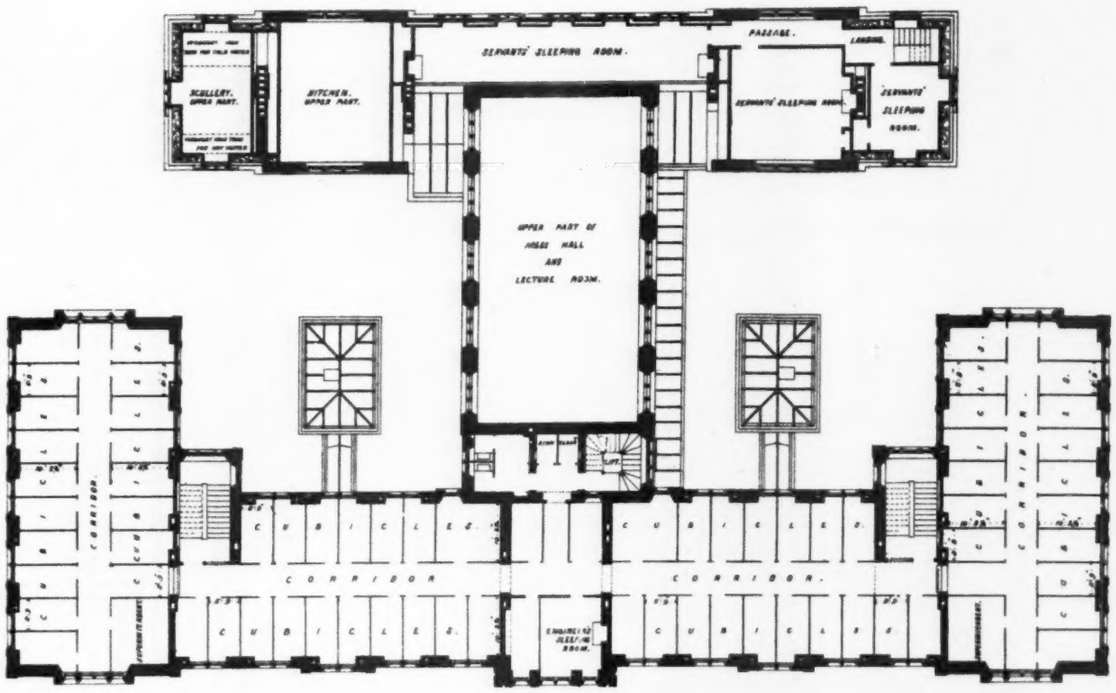




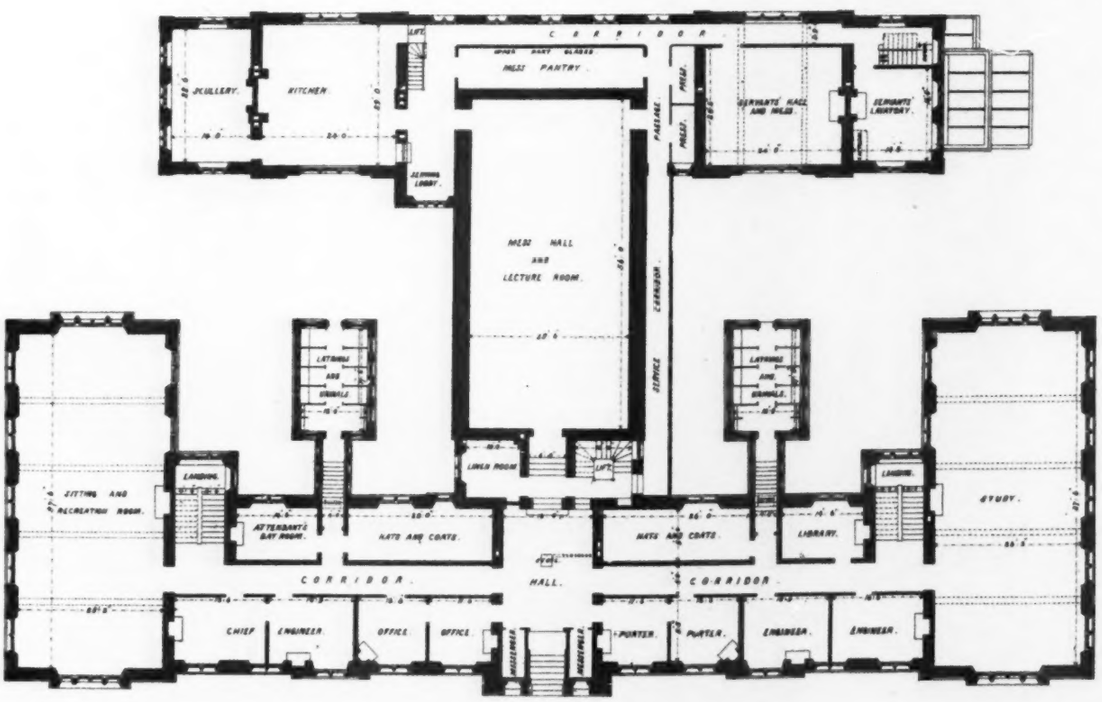
Whiteman & Bass. Photo-Litho 236, High Holborn.

Wyman & Sons, Printers, 74 Queen St.

LODGE AND STABLE BUILDINGS, EDGWARE.—Mr. Jas. George Buckle, Architect.



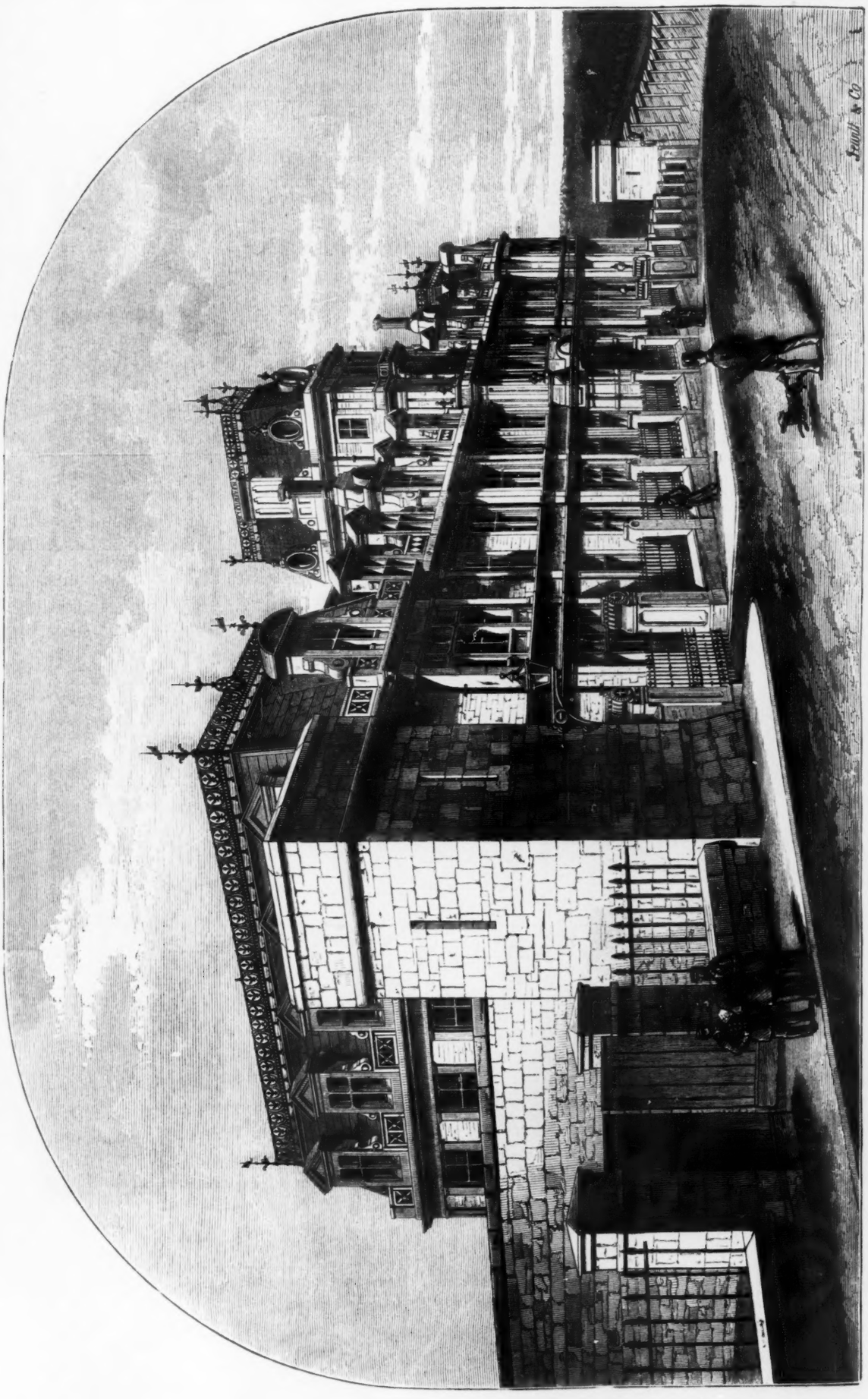
FIRST FLOOR PLAN.



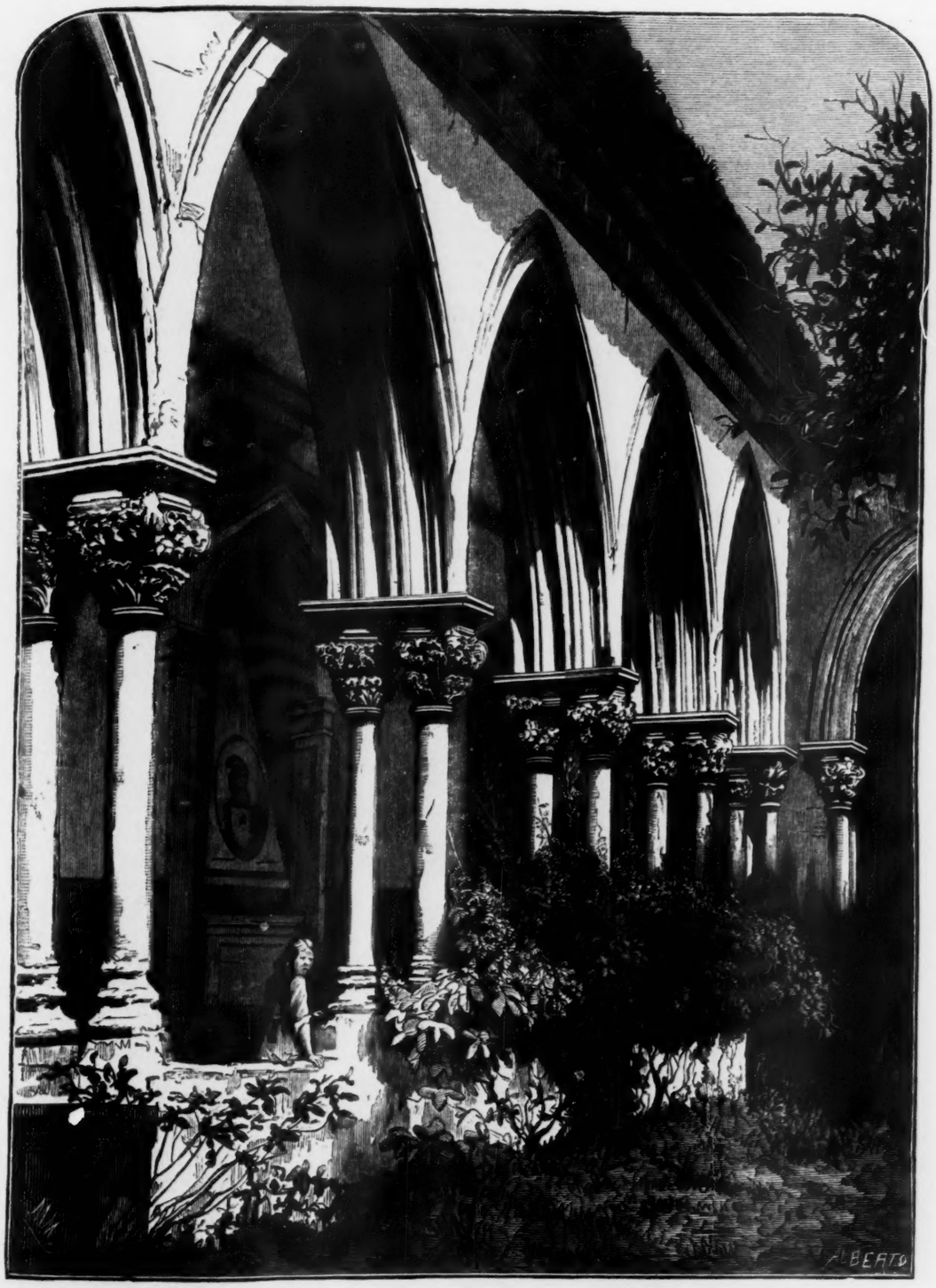
GROUND PLAN.

Whiteman & Bass, *Photo-Litho* Wyman & Sons, Printers.

KEYHAM YARD: QUARTERS FOR ENGINEER STUDENTS.

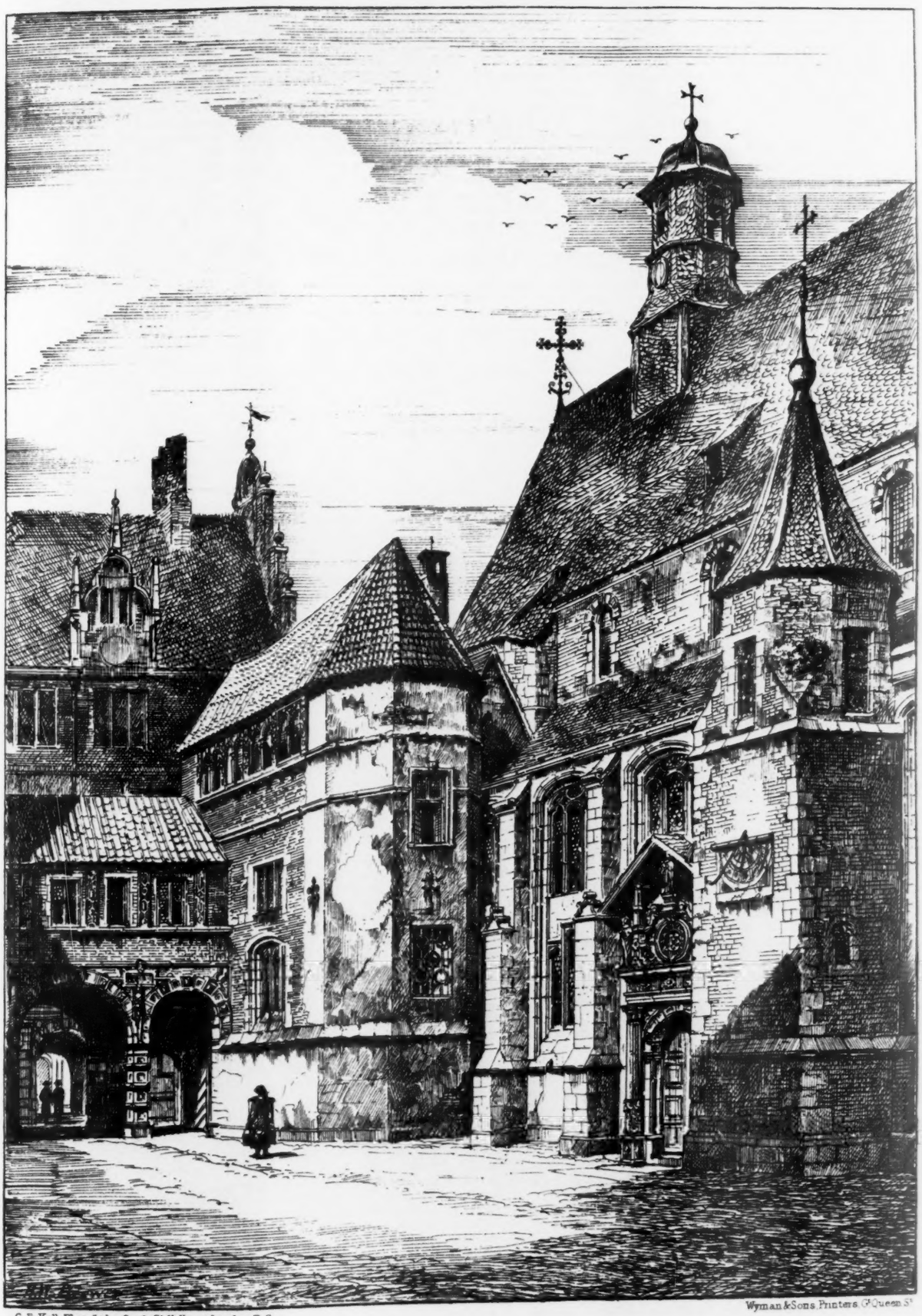


THE ENGINEER STUDENTS' QUARTERS, KEYHAM, DEVONPORT.—Erected under the Direction of Colonel Pasley, C.B., R.E.



THE "CONVENTO DE CHRISTO," AT THOMAR, PORTUGAL: CLOISTERS OF THE CEMETERY.

Attributed to Commencement of the Twelfth Century.



C. F. Kell, Photo-Litho, Castle St., Holborn, London, E.C.

Wyman & Sons, Printers, 74 Queen St.

THE OLD JESUIT CHURCH AT MÜNSTER, WESTPHALIA: *Commenced*, 1590; *Completed*, 1599.

THE ENGINEER STUDENTS' QUARTERS, KEYHAM, DEVONPORT.

The site of the new College for Engineer Students at Keyham-yard abuts on the Saltash-road, overlooking Keyham-yard in its rear, and the Hamoaze, with its naval anchorage, to the north. The new quarters occupy an area just beyond the official residences, and the buildings are on the same level, some 30 ft. above the floor of the yard. The plans were prepared at the Admiralty Office, Spring-gardens, under the direction of Colonel Pasley, C.B. The main building, which is of three stories above the basement, has a frontage of about 200 ft. This, the principal elevation, has in the centre a tower, carried up from the entrance, slightly in advance of the flanks, and higher by one story than these, or the wings, somewhat similar in design, which complete the frontage. The materials used,—limestone ashlar, with Portland dressings,—are well adapted to the style. Mullioned and transomed windows fill in the openings. The upper story has dormer windows; the tower and wings, having Mansard roofs, are finished by a bold cresting of Macfarlane's ornamental ironwork, with gilded vanes.

The site is rectangular, and slopes to the north and rear, the basement occupying the declivity, and bringing the ground-floor to a level with the high-road. The design of the main building takes the form of the letter ⊥ reversed, and the premises, with the narrow courtlage surrounding them, occupy all the space at the architect's disposal. There are three exits opening on the courtyard, in addition to a "tradesmen's porch," and the entrances to the cellars and stores. Roughly speaking, the premises consist of the officers' and students' residential quarters, which, with the spacious study and recreation hall, occupy the frontage, the mess and lecture hall in the centre of block, immediately beyond the main entrance, and the kitchens and servants' quarters flanking them in the rear. The basement of the frontage underlies the tower and the north wing, the former occupied by the coal-cellars, the furnace-room of the heating system, and a fine suite of baths and lavatories. The rear-block basement, under the kitchen and servants' quarters, is given up to the cook and steward, and contains, besides two rooms for each of these functionaries, a long range of cool and dark larders, the coal-cellar, knife and boots room, and other offices. In the yards are the latrines, separate, well-fitted, well-ventilated buildings, each capped by a flushing-tank of some 3,000 gallons capacity. The servants' latrines are fitted up on the system of Macfarlane & Co., who have given much attention, and with considerable success, to the arrangement and appearance of structures of this kind.

We give a view of the principal front, and plans, which will sufficiently show the accommodation provided.

Above the basement one side of the building is a *facsimile* of the other, the entrance-hall and tower rooms standing between. The former, the vestibule, is reached by a short flight of steps, steps again lead to some small rooms under the tower, and more steps to the great hall. The misfortune of the building in respect of site is apparent enough in the necessity for these gradients, which dwarf the entrance and hall. From the entrance, which is flanked by messengers' lobbies, broad steps open to the vestibule, a stone-paved hall from which on either side a corridor branches. Upon the corridors neat suites of rooms, designated as officers' apartments, are placed, and the passages end at the common rooms of the college,—at one end the recreation-room, and at the other the study. The two rooms correspond exactly. Each of them occupies an entire floor of the wing, and has an area of about 1,500 ft., the dimensions being:—Length, 57 ft. 6 in.; width, 26 ft.; and height 13 ft. 9 in. They are warmed by Manchester grates, the speciality of which is a chamber at the back from which a current of heated air is continually being diffused. The windows of the recreation-room overlook the shipping in the Hamoaze; the view from the study windows is limited more closely. The only room in the building which is superior to these is the mess and lecture hall, where the advantage of superior height is seen. It occupies the central position on the site. Lighted from each side by five mullioned and transomed windows as well as by dormers in the lofty circular roof and a three-centred segmental window at the extreme end, it is luminous and airy. The roof is borne upon moulded timber ribs, springing from carved corbels. The only additional ornament is a pedimental entablature with voluted trusses, above the main entrance, which will support a clock. Hot-water pipes running the length of the hall provide for heating, and for ventilation there are several perforated discs in the roof, all communicating with a "trunk" above, which extends the length of the hall, and is fitted with one of Howorth's Archimedean ventilators, of large size. The ventilator is inclosed in a flèche. For evening use gas pendants hung from the roof are provided, and these centre in the ventilating discs already mentioned. The kitchen offices in rear of the mess-hall are provided with a special corridor, so that access may be had thence to the main building without entering the hall.

Each corridor has a flight of stairs leading to the upper floors. These are the dormitories for the students. Each flank is partitioned off into sixty-six little compartments, 10 ft. by 5 ft. 6 in. in area, with the regulation fixtures, bed, washstand, chest of drawers, and book-case. On each floor are two double-sized cubicles for superintendents. Down each gangway hot-water pipes run beneath the usual grating. Every cubicle is separately lighted, and is in all respects distinct. Sleeping accommodation is thus provided on each floor for sixty-six students and four superintendents, and the two stories devoted to the dormitories afford room for 132 students and eight superintendents, the space occupied being that of 148 cubicles. This arrangement leaves the tower-rooms untouched, and they are fitted up as officers' quarters. The height of the first floor is 11 ft. 9 in., and that of the second floor 13 ft. 9 in. Each wing has its separate staircase and separate offices of all kinds, as well as its own exit into the courtyard. Above the level of the dormitories there are two additional stories in the tower, which form the sick-bay of the establishment, with an attendant's room above.

The kitchen, a lofty room, 24 ft. square, and the scullery adjoining it, having been fitted up by Messrs. Benham & Sons, of Wigmore-street, London, with cooking apparatus sufficient for the daily requirements of from 150 to 200 persons. The ranges, which are fixed back to back, cover an area of 81 square feet. Large ovens for baking and roasting, and jacketed boilers for steam cooking, as well as appliances for steaming potatoes, heating water and plates, and supplying hot water to the baths, are found connected with the kitchen. A cylindrical boiler is fitted in the basement for the maintenance of this service, and a lift connects the kitchen with the stores. In the other wing of the rear block is a spacious servants' hall, and in the floor above are the servants' bedrooms. Dependent on the kitchen for hot-water supply, but otherwise detached from it, are the baths and lavatories, in the basement of the mess-hall. The space available for lavatories is divided into a sufficient number of separate enclosures for the whole of the students, and to each water is laid on, and a galvanised tub and sink fixed. There are five baths, supplied with hot and cold water. The floor, which is of asphalt, was specially laid by Claridge's Asphalt Company, of London.

The cost, as appears from the Naval Estimates, has been above 30,000*l*. The staircases are of teak; the passages below stairs are laid with York paving. The limestone facing of the walls is of stone from the Pomphlett quarries, and this is backed with a lining of brick. The Portland stone used in the dressings was prepared on the works by stone-dressing machinery. The premises are laid throughout with a hot-water system. The lift, which works from the basement to the upper floors, is fitted with Waygood & Co.'s automatic check. For the windows, the sash-fastener invented by Mr. Brenton, of Polbathic, is employed throughout the college. The buildings were erected by Mr. John Pethick, of Plymouth, under the superintendence of Mr. Tinkler, the Government clerk of works.

THE LATE MR. HARVEY EGINTON, ARCHITECT.

A well-known Shakspearian scholar is anxious to ascertain who has the papers of the late Mr. Harvey Eginton, the architect who restored Stratford-on-Avon Church in 1837. As this is to aid in a somewhat important Shakspearian inquiry, we willingly ask the question, and shall be glad to have it answered.

LODGE AND STABLE BUILDINGS, EDGWARE.

Our illustration represents stable buildings recently completed at Orange-hill, Edgware, for Mr. William Ruddock. The accommodation provided consists of five rooms in lodge; four-stall stable and two loose boxes, with loft and three rooms over the stable for coachman; coach-house for three carriages; harness-room; cow-house for twelve cows; calf-house; and dairy. Spacious lofts are provided in the roofs. The materials are stock-bricks internally with red facings. The window-sills and door-jambs are formed with white bull-nose bricks; Pether's bricks for the arches, and Brown's ornamental paterræ for the string-courses. The stable fittings and hot-water apparatus were supplied by Messrs. Marshall & Hatch. It may interest our professional readers to know that the stone dressings were executed with Beer stone, which, although exposed to the severest trials during last winter, failed only in one or two instances. The buildings were erected by W. J. Beale, of Battersea, under the superintendence of the architect, Mr. James George Buckle, of 10, Adam-street, Adelphi. The mansion to which these stables are attached is now being built by the proprietor without a contractor from designs and under the supervision of the same architect.

THE CLOISTERS OF THE "CONVENTO DE CHRISTO," THOMAR, PORTUGAL.

Among the architectural monuments of Portugal to which importance attaches, not only on account of their historical associations but their value also to the architect and archæologist with regard to their styles, must be placed the "Convento de Christo" of Thomar, one of the finest edifices in Portugal. Its early traditions are mixed up with those of the historic fortress of Gualdim Paes, Master of the Order of the Knights Templars, who established themselves in Portugal in 1125. The façade of this edifice was erected much later, namely, in the reign of Dom João III., the fifteenth king of Portugal, who reigned between the years 1521 and 1557. The building was considerably enlarged by his grandson, Dom Sebastião, who succeeded him on the throne; and, subsequently, by the three kings, Dons Filippe II., III., and IV., of Castella, who reigned in Portugal between the years 1580 and 1640. The edifice has attached to it more cloisters than any other convent in Portugal. These cloisters present to the discerning eye of the architect and archæologist specimens of a variety of styles extending through the various architectural epochs of that kingdom, and including the Renaissance from its first introduction in the ecclesiastical architecture of Christendom down to its most flourishing epoch.

We intend noticing here briefly only the cloisters, one of which we illustrate. This adjoins the chapel, and is of small dimensions; it is devoid of any considerable amount of ornamentation, but is of solid construction. It bears unmistakable marks of antiquity, and is said to be co-eval with the first foundation of the Knights Templars in Portugal.

Two other cloisters were erected by the Infante Dom Henrique, one of which is at present in ruins, and which was partly destroyed during the fatal period of Vandalism during which all the monuments of Portugal suffered. Another cloister, called "Santa Barbara," was erected by King Dom Manuel; it is small, but of handsome appearance, and in the Gothic style. Another larger cloister, adjoining, is mediocre in execution, and without attraction and beauty. The same may be said of that called "Corvos." The cloister called "Mixo" is only remarkable as permitting a view, through one of the openings of its upper walls, of the gates in the façade of the hall where, according to tradition, the three estates of the realm, the clergy, nobility, and commons, assembled at the call of King Filippe II. of Castella, in 1581. The cloister called "the Filippes" surpasses all the others in grandeur and excellence of execution. The superabundance of its ornamentation, and the multiplicity of its columns, far from detracting from its merits, combine to make it a most beautiful production of the Renaissance of that period in Portugal.

The cloister which we illustrate is that of the Cemetery used as the last resting-place for the members of the Order of Christ. It ranks early, as we have said, in the chronological order of the erection of the cloisters, and is a very inte-

resting work. It displays pointed arches, supported by slender double columns, ending in elegantly-carved capitals in the Gothico-Byzantine style. The name of its architect is not known.

DISCUSSION ON SANITARY PLUMBING.

On Monday evening last there took place, in the Hall of the Society of Arts, Adelphi, a discussion on the lectures* delivered there during the last three months by Mr. S. Stevens Hellyer, under the auspices of the National Health Society, on "The Science and Art of Sanitary Plumbing." There was a good attendance, the audience comprising not only working plumbers, but many master plumbers, and several architects and sanitary engineers.

Mr. Ernest Hart presided, and in opening the proceedings read the conditions which have been laid down by the National Health Society for the working plumbers' competition for the prizes offered by the society for the best specimens of workmanship in plumbing based on sanitary principles. Any one who desires to compete must fill up a form to be obtained from the National Health Society, 44, Berners-street, and all such forms must be returned by the 15th of September.

Mr. Daniel Emptage, of Margate, led off the discussion by reading a short paper, in which he expressed his opinion that Mr. Hellyer's able lectures were calculated to do a vast amount of good in awakening interest upon the important subject of which they treated. He agreed in the main with Mr. Hellyer's remarks as to country shops, and with the advice given to young working plumbers to come up to London to improve themselves in their trade. At the same time, as a provincial man, he felt bound to say a few words on behalf of the plumbers of provincial towns, in many of which a very lively interest was taken in sanitary matters. In his own town there were many large scholastic and other establishments in which the sanitary arrangements were such as would be hardly found fault with even by Mr. Hellyer. As the result of a large number of practical experiments made during the last two years, he (the speaker) had arrived at the following conclusions with regard to trap-waving or syphonage, viz.:—1. That the S or P syphons are, when unventilated, very unsafe, from the fact that they are easily untrapped by waving-out or syphonage. 2. That the cast D, the "Eclipse," and the V traps hold their seals much more tenaciously than the syphons, but are still very liable under some conditions to become unsealed when not properly protected by ventilation. 3. That the old D is very much more difficult to untrap than any of the preceding traps, but even this, when without ventilation, is not safe from syphonage. 4. That the seal of a P syphon, even under the most favourable circumstances with respect to ventilation, is not safe against a rush of water passing rapidly through it. 5. That a well-made S trap, when properly ventilated, and fixed in connexion with a fully-ventilated soil-pipe, is very difficult to unseal. 6. That the other four traps mentioned are, when properly ventilated, quite secure from either waving out or syphonage, and they have the advantage of being so constructed that their connexion with the soil-pipe could be made at a much higher level than was possible with the S. They all have, however the great disadvantage of being more foul. Mr. Emptage went on to say that, while thinking over the matter, it occurred to him that the S trap might be so altered that, while retaining its non-syphoning qualities, it should at the same time allow of a connexion with the soil-pipe similar to the others. He had such a trap made, and was very pleased to find it answer his expectations in every respect. In it he still retained the dome of the "outgo" as in the S. He had subjected this new form of trap to the most severe tests, and found that when it was fully protected by ventilation it was quite safe from waving or syphonage. He had since patented it. With regard to ventilation, to properly ventilate a soil-pipe and trap, careful thought was required. The kind of apparatus, length of soil-pipe and vent-pipe, also the arrangements below the soil-pipe, must all be taken into consideration, because the diameter of pipe which would be ample for one arrangement would be quite inadequate for another. He was very much surprised to hear Mr. Hellyer say that he should be satisfied with a 2-in. vent-pipe, 50 ft. or 60 ft. long, to ventilate a soil-pipe and trap 7 ft. long and open at the foot. He had practically tried such an arrangement fitted with the five traps before mentioned, alternately, and he found that the only trap which would be quite safe under such conditions was the D. The trap which required the most carefully ventilating was the plain round siphon, and that which required the least was the old D. There was, however, a great difference in the effect which ventilation had upon the two traps. With the syphon the water still rushed through, thoroughly cleansing the trap, and leaving it sealed with perfectly clear water, but the D retained more filth when fitted with an air-pipe than without one. He agreed with Mr. Hellyer in condemning the pan-closet, and the outcome of the experience he (the speaker) had gained since abandoning the pan-closet was that the direct-action closets, such as Phillips's "Sanitary," the "Artisan," the "Carmichael," and the "Vortex," were far superior to several of the more costly ones. Such closets, fixed in a proper manner, with suitable ventilation, and with a flush of two gallons delivered in five seconds, were, in his experience, unequalled for cleanliness. With regard to cowls, he had fixed several on soil-pipes and drains at Margate, both in exposed and in sheltered positions, and upon several he had made some careful observations. In one instance he found during a slight shuffy wind that Banner's cowl repeatedly stopped mouth to wind, at which times the smoke with which he was testing it escaped at the foot-vent. In another case he found that after the smoke had ceased to issue from Banner's cowl, it came up again if he removed the cowl, and ceased when he replaced it. He tried that three times with the same results. In both these instances he found the plain open pipe quite as effective as with the cowl,—indeed, more so. From other observations he was convinced that in cases where the ventilation of the soil-pipes and drains was so arranged that it mattered not whether the current of air passed up or down them, open pipes were best. There were, however, places where it was very desirable to, as far as possible, prevent down-draught, and in such cases cowls were sometimes very useful. In conclusion, Mr. Emptage urged upon all connected with the plumbing trade the necessity of giving increased study to the subject, and expressed his thanks to Mr. Ernest Turner for suggesting, to the National Health Society for promoting, and to Mr. Hellyer for delivering, the lectures.

Mr. Robert Smith denied that Mr. Hellyer was correct in his statement that non-society workmen in the plumbing trade were better workmen than society men. Why should they be? Society men had to rely upon themselves and upon the character of their work as much as non-society men. Mr. Hellyer had advocated the granting of certificates of competency to plumbers. Some years ago there was a serious strike and lock-out in the building trade upon the introduction of what was known at the time as the "Document." Such a certificate as was advocated by Mr. Hellyer would be neither more nor less than the "Document" in a new form, and if the suggestion were adopted the working plumber would be entirely in the power and at the mercy of his employer. While there was some truth in Mr. Hellyer's assertion that young plumbers did not always have a proper opportunity of learning their trade when they were apprenticed in small shops, it should not be forgotten that in a small shop an apprentice would have a greater range and variety of work in all branches, whereas in large shops the principle of subdivision of labour was sure to be more or less thoroughly carried out, and the apprentice would most likely be kept almost entirely to that particular branch of work in which he showed most proficiency. He denied that the S trap was superior to the D trap, and claimed for the latter that if properly made it was self-cleansing. He thought Mr. Hellyer had been unduly severe in his strictures upon the poor working plumber, while he had "let down" Mr. Norman Shaw very gently,—perhaps because Mr. Shaw was an architect for whom Mr. Hellyer might hope to do work in the future.

The Chairman here intimated that he thought Mr. Smith was going a little wide of the point in imputing personal motives.

Mr. Smith thought he was justified in what he had said. He did not think much of the practicability of Mr. Hellyer's recommendation to use 2½ in. soil-pipes. Although the lectures had been very entertaining, he did not think that the audience had had one particle of knowledge imparted to them from beginning to end ("Oh, oh!" laughter, and hisses). He certainly had not gained one particle of information. The lectures had been of a most rudimentary kind.

Mr. P. J. Davies observed that a great deal had been said by Mr. Hellyer about D-traps being non-cleansing, but he (the speaker) contended that if such traps were properly made they were as much self-cleansing traps as S or round-pipe traps. Mr. Davies proceeded to show, by experiment, that such matters as pebbles and pocket-handkerchiefs could be washed out of a D-trap by one flush, and he concluded by describing the means of geometrically setting-out an improved form of D-trap contrived by him. The improvement consists, first, in making the "band" of a width not exceeding that of the outside of the dip, the cheeks being only so far apart as just to admit the dip-pipe between them. Secondly, the improvement consists in making the "outgo" of the cheeks of such a shape as will most readily facilitate the passage of the contents of the trap outward over the "band."

Mr. T. H. Court said that, as a practical working foreman of plumbers, he was prepared to say that some of the statements contained in Mr. Hellyer's lectures were calculated to do harm to young plumbers; for instance, the advice to the workman to provide himself or to burden his "mate" with two pots of solder, one to make underhand joints, and the other for general work. If a workman asked him for two solder-pots he should probably give him his ticket to get his money and go off the job. Then Mr. Hellyer had recommended the workman to dilute his solder by putting metal into it. That was very bad advice to give to young plumbers. Every working plumber ought to know without very much testing whether a bar of solder was fit for use or not; if he did not he certainly had not learnt the art of making his solder. He was surprised that Mr. Hellyer had not given some instruction on that point, and that he had not described the way of telling when the solder got foul and the manner of cleansing it. As to joints, Mr. Hellyer had recommended long ones, which were thought by some to be better in appearance than short ones, and to have less tendency to "sweat" because they were wiped cleaner than short ones. But the tendency to sweat could be obviated equally well by bright as by over-cast joints. He did not agree with Mr. Hellyer in saying that S traps were less liable to "fur" and more self-cleansing than D-traps. Mr. Hellyer had strongly condemned the journeyman plumber for defective work, the blame of which should frequently rest upon architects and others. As foreman of a job, he (the speaker) once had put into his hand a specification in which it was provided that a ¾-in. service-pipe should be used for the supply of four urinals, four closets, three lavatories, two sinks, and a bath (!). He condemned that arrangement as inadequate, and got a clerk of works to represent its inadequacy to the architect; but he was told in reply to follow the specification. The result was that in less than twelve months the whole of the sanitary arrangements were out of order, and a sanitary engineer was called in to put them right. He thought Mr. Hellyer was inconsistent in condemning the pan-closet and yet continuing to supply it. He (the speaker) had had many of them taken out, and when asked what should be done with them, he had always said, "Smash 'em up, and throw 'em on the heap, for they are a disgrace to any one who fixes 'em!"

Mr. W. P. Buchan (of Glasgow) said he had not had the privilege of hearing Mr. Hellyer's lectures, but he was happy to have had the opportunity of reading the reports of them, and he thought very highly of them, notwithstanding the criticisms which he had heard from previous speakers. So far as he could judge from the lectures, as published, he approved of almost everything that Mr. Hellyer had said. He (Mr. Buchan) was at a loss to understand the favour in which the D-trap seemed to be held by some of the speakers, and their prejudice against the syphon-trap. Glasgow was no inconsiderable city, and a great deal of good plumbing work was to be found there; yet, as a Glasgow-bred plumber of thirty years' experience, he never remembered seeing a D-trap used there. All the Glasgow plumbing was done

* For reports of the lectures see the *Builder*, vol. xl., pp. 651, 711, 775; and current vol. pp. 27, 87, 185.

with syphon traps, and syphonage was easily preventible by means of ventilation. It seemed to be forgotten that the ventilating pipe to a trap, if properly made and fixed, killed two birds with one stone, so to speak, for it prevented syphonage, and at the same time prevented the accumulation of foul gases, which would eat away the lead unless carried off. Mr. Davies's experiments with his D-trap were not to his (the speaker's) mind altogether conclusive, for pebbles and pocket-handkerchiefs could be more easily cleared out of a trap than urinary matter and flocculent particles of fæces. Much as was to be said against the D-trap, however, it was far safer to use it than to use a trapless closet. Where illness resulting in death arose from the use of trapless closets, the fixers of them ought to be found guilty of manslaughter. He thought that no one could defend the use of trapless closets upon any scientific or hygienic ground. Pan-closets were bad enough, but where they could not be removed, their evils could be mitigated by ventilating the containers, but with two pipes. While some architects were not blameless for bad plumbing, there were others who had done a great deal to promote good work. There were, he knew, many workmen in the trade who were only partially competent, but Mr. Hellyer's lectures were part of a movement designed to help every working plumber to become a first-class workman. He considered that plumbing was the leading trade connected with building, and that plumbers ought to be the best paid workmen in the building trade. Upon the working plumber largely depended the health of many a household, and as he was often sent to do work without being supervised by a foreman, he should, when of proved competency and reliability, be remunerated for his work with some regard to the responsibility of his position.

Mr. J. Vance said that sometimes when a working plumber who understood his business ventured to point out a defect or a bad arrangement in plumbing work proposed to be done, he was told, by architect or proprietor, as the case might be, "Do as you are told; you are not paid for knowing anything about it, you are paid for doing the work according to instructions!" Personally he felt very much indebted to Mr. Hellyer for his lectures. He had only to say, in conclusion, that when architects or sanitary engineers came on a job to give instructions as to plumbing, they should see the plumber himself, and not give their instructions to the general foreman of works, who most likely knew nothing of plumbing work, and would therefore be unable to clearly explain their wishes. Instead of allowing their instructions about plumbing to be conveyed secondhand, architects and sanitary engineers would do well to see the plumber himself.

Mr. S. Douglass Scoffern said he had not had the advantage of hearing Mr. Hellyer's lectures, which he was sure were of great practical value, but he wished to direct attention to the grave responsibility incurred by partially-instructed tradesmen who arrogated to themselves, without any proper warrant, the title of sanitary, gas, or hot-water engineer, and sometimes all combined. Such pretensions deluded the public, who, by confiding in such men, often incurred disaster. He cited last winter's experience of frozen water-pipes and fatal explosions of kitchen boilers in proof of the danger of employing incompetent men.

Mr. H. H. Collins said that as so much had been said in condemnation of trapless closets, he felt bound to say that one which he had had in use for several years had answered admirably. A good trapless closet had much to recommend it if properly situated and fixed. Of course, if placed in close proximity to, or in absolute conjunction with, a sewer, it would be a most objectionable appliance to use. He wished to say, in reference to what had been said about architects' neglect or ignorance of sanitary details, that very often an architect was no more able to help himself against the stupidity or obstinacy of his client than a tradesman or workman was able to set at nought the instructions of his employer. It was obviously to the interest of the architect to make his buildings healthy; for, if he did not, the sanitary work of houses would pass into the hands of a class of gentlemen called "specialists." It should be remembered that all tradesmen had not established themselves as firmly as Mr. Hellyer, and that all architects did not occupy the proud position of Mr. Norman Shaw. It was not every tradesman nor every architect who could afford to say, "If you won't have the work carried out as I say it ought to be done, I won't undertake it." To an ordinary tradesman or architect the reply would be, "Very well; I will go elsewhere!" Thus to be too high-minded would be, in many cases, to starve. The architect who paid due regard to the most important branches of his work, viz.,—those relating to construction and sanitation, would not spend a lot of his client's money in decorative work to the neglect of sanitary conditions. Personally, he felt deeply indebted to Mr. Hellyer for what he had done, not only by these lectures, but by his writings, to improve the sanitary condition of houses. He was sorry for the speaker who had said he had not gained one particle of information from Mr. Hellyer's lectures, for Dr. Johnson told us that we could learn something even from a fool.

Mr. Lammas urged the formation of an institution for the encouragement, protection, and advancement of the plumbing trade,—a place where the members could meet to read, think, and discuss methods and principles of work, and including, if possible, a small workshop, where the members could put their ideas into execution and to the test of practical experiment. He felt very much indebted to Mr. Hellyer for his lectures.

Mr. Wise supported the suggestion made by the last speaker.

Mr. Savory said that although, perhaps, all that had been said by Mr. Hellyer was not to be taken without question, he had laid down many principles which could not be controverted. It was desirable that the lectures should be published *in extenso* in a cheap form, together with a report of the discussion.

The Chairman, in closing the discussion, said that when Mr. Ernest Turner suggested that the National Health Society should arrange for a course of lectures to working plumbers upon the principles and practice of sanitary plumbing, the initial difficulty was to get a competent lecturer. He knowing the name of Mr. Hellyer as that of the writer of the best practical work on plumbing, invited him to give the lectures, and after consideration he consented to do so, although very much occupied with business and not in the best of health. The lectures had been undertaken by Mr. Hellyer without any remuneration beyond that which was afforded him by the knowledge that they have aroused considerable thought and directed much attention to the subject. The laborious and complete way in which the lectures had been illustrated by diagrams was worthy of all praise. The lectures had been delivered not only in the presence of working plumbers, but in the presence of some of the most skilled and experienced judges of sanitary work in the country, including Mr. Rogers Field, Mr. Ernest Turner, Mr. H. H. Collins, and Mr. Eassie, and he had the authority for saying that those gentlemen regarded Mr. Hellyer's lectures as being of very great value.

Mr. Hellyer, in replying on the discussion, said that he was gratified to find that the remarks made by those who had spoken in the discussion were so largely in favour of the observations he had made in his lectures. With reference to Mr. Emptage's remarks on cowls, he would only say that his experience was that cowls were of advantage: they might, perhaps, add about 10 per cent. to the up-current. He had not made any actual experiments with cowls, but he had found them, in scores of cases, very helpful. Up-currents of air in soil-pipes could generally be increased by the use of proper cowls. With regard to non-society men *versus* society men, considered as workmen, he simply stated his conviction, based on experience, when he said that as a rule non-society men were the best workmen. He wanted the trade societies to be more careful in excluding incompetent men than they had been. He had no more feeling against society men than against non-society men, and had good workmen belonging to both classes in his employ. He was very glad if, as a result of his lectures, Mr. Davies had been able to improve the D-trap, but he (Mr. Hellyer) like a previous speaker, could not see the conclusiveness of the experiments which had been made with Mr. Davies's trap. He challenged the accuracy of Mr. Court's statement that anything said by him in the course of these lectures was calculated to do harm to young plumbers. With regard to using two pots of solder, he simply recommended that in large buildings or jobs two pots of solder should be in use, one for underhand joints and one for coarser joints, the object being to save time. Time was an important element in work, and as an employer of labour he valued time. It frequently hinged upon time whether a master plumber made profit or no profit on a job. As to pan-closets, he had previously explained that he only supplied them under protest, when there was no help but to use them, as in the circumstances he had mentioned. As a matter-of-fact, irrespective of the job to which he had referred, his firm had almost entirely discarded their manufacture and use, and had not supplied more than thirty during the last three years. On all their circulars it was expressly stated beneath the illustration of the pan-closet that it was not an appliance to be recommended. He was gratified that Mr. Buchan should have supported by the weight of his experience what he (the lecturer) had said, for Mr. Buchan was well known throughout the country. Notwithstanding what Mr. Collins had said as to trapless closets, he (the lecturer) still stood by his condemnation of them. In conclusion, Mr. Hellyer said he looked upon sanitary plumbing as an important branch of Preventive Medicine, and, therefore, he regarded the efforts which were being made by members of the medical profession to render it more common as most disinterested and praiseworthy.

After some questions as to whether the specimens of plumbers' work exhibited at the recent Sanitary Exhibition could compete for the National Health Society's prizes (to which the chairman replied in the affirmative), the meeting closed with thanks to Mr. Hellyer and the chairman.

THE ST. JOHN AMBULANCE ASSOCIATION.

On Saturday last, the interesting and instructive Medical and Sanitary Exhibition, which a large number of the professional and outside public owe to the energy of the authorities of the Parkes Museum of Hygiene, was brought to a close, after a highly-successful and only too short a period, by a "demonstration," so the official programme had it, of the pupils of the St. John Ambulance Association, a demonstration illustrating the methods by which hasty and ready aid can be afforded to the wounded and injured in any of the sad accidents which unfortunately so frequently occur.

We specially notice this closing feature of the Exhibition, not alone on the score of its forming one of the features of an exhibition in the aims of which so many of our readers are interested, but with a view to drawing attention,—as we hope to do more fully at a later date,—to the praiseworthy aims of the Ambulance Association, established now some four years since by the Order of St. John of Jerusalem in England, "for the purpose of disseminating general information as to the preliminary treatment of the sick and injured, among all classes of society."

To the readers of any widely-circulated journal attention drawn to an association with such aims would be interesting, but to the readers of the *Builder* the objects of the St. John Ambulance Association are, we feel sure, of particular importance. Accidents, and unavoidable accidents, so frequently happen among those employed in the building and kindred trades that some knowledge of the treatment necessary for the wounded, in the first place, would be of the utmost service in cases of emergency. The series of experiments offered to the public on Saturday last was typical of the accidents that are daily likely to occur; eight different features formed the programme, cases illustrating first aid to be rendered to the injured by civilians (male and female) after railway and other accidents; methods of lifting and carrying the injured; the use of the stretcher; case of gunshot wound to the right thigh breaking the bone; case of both legs broken below the knees by a gunpowder explosion; right hand crushed by machinery accident, with severe arterial bleeding; left foot shot off, with severe arterial bleeding; man found in the streets in a state of insensibility, with a severe wound in the head; and finally the different ways in which a man can help a wounded comrade to reach home. In all these cases aiders and fictitious wounded were ably personated by a number of policemen, civilians, volunteers, and members of the regular army. Great interest, as may be imagined, was evinced by the large crowd collected in the conservatory of the Horticultural Society's Garden to witness the interesting and instructive

"demonstration," the chief and most useful lesson borne away from which by the uninitiated should, we believe, be considered to be that in cases of accident presence of mind and very simple apparatus, not necessarily surgical, are amply sufficient in accidents to afford the first aid to the injured; walking-sticks, umbrellas, bayonets, swords, sheaths, policemen's truncheons, straps, handkerchiefs, scarves, are materials that can be found at hand in all emergencies, and serve admirably at a pinch all purposes of temporary splints and other scientific apparatus.*

We learn that in the four years of its existence, the Ambulance Association has awarded no fewer than 30,000 certificates of proficiency in the admirable course of instruction it affords to persons of both sexes and of every rank of life.

How often do we admire the presence of mind that is displayed by workmen whenever a serious accident takes place in the workshop, but how much more often have we to regret the absence of the knowledge of the precise manner in which immediately to treat a case of fracture or severe bleeding, and how still more often have we to deplore the absence of those who have the slightest conception of what to do in a case of emergency? It is this knowledge, so necessary to aid the professional skill, which the St. John Ambulance Association is desirous to spread among the public.

The Medical and Sanitary Exhibition organised by the Committee of the Parkes Museum was open for the last time on Saturday, August 13th, when the number of visitors, exclusive of season-ticket holders, was 1,221, making a total of 24,333 visitors in the four weeks during which the Exhibition has been open, allowing only for one visit by each season-ticket holder. During the day, the Secretary, Mr. Mark Judge, visited the different exhibitors for the purpose of ascertaining their opinion as to the success of the Exhibition. The exhibitors generally expressed themselves as well satisfied with the result, some going so far as to say that they had done an exceptional amount of business, owing to the fact that a very large proportion of the visitors had been either medical men, architects, or engineers. The representatives of the exhibitors, who have been in daily attendance during the Exhibition, marked their appreciation of the arrangements made for their convenience, by presenting, on Saturday, a small purse of gold to the Superintendent, Mr. Smithson.

ARCHITECTS' CHARGES.

FLOATING A COMPANY.

An arbitration case, which involved several important points as affecting architects' charges, was concluded at the Institution of Surveyors on Friday, the 5th inst., after having occupied two days. The claimant, Mr. Paraire, sought to recover 3,000*l.* for preparing plans, obtaining an estimate for the Alcazar, Leicester-square, and for negotiating for financing the company.

Mr. Glynn was counsel for the claimant. Mr. Winch and Mr. A. Ward appeared for the Alcazar Company. Mr. John Whichcord, past-president of the Royal Institute of British Architects, is the arbitrator.

Mr. Paraire stated the nature of the work done, and Mr. Allbutt, a financier, described the progress which was made in financing the company when the building project was abandoned. The nature of the case will be gathered from the counsel's speeches. It was agreed not to call any architects as witnesses to the custom of the profession, the arbitrator himself being pre-eminently qualified to judge upon points of practice and the reasonableness of the charges. Mr. Glynn, however, read a letter from Mr. Cates, who was unable to be present, stating that he considered the amount claimed by Mr. Paraire to be fair and reasonable; and though the urgency of the company prevented the completion of the work, it involved more cost to Mr. Paraire than if it had been carried out in the usual way. The object was to obtain a *bonâ fide* tender, and that Mr. Paraire procured, and his claim to remuneration for it seemed perfectly clear. Mr. Glynn further stated that he should have called Professor Roger Smith, whose evidence would have been to the same effect.

Mr. Ward said his evidence would, on the contrary, have been that these charges were four times too much.

Mr. Glynn remarked that Prof. Smith took 2½ per cent. instead of 3 per cent.; and he had the Professor and another architect present to prove the facts, but he agreed to leave it in the arbitrator's hands without calling them; but he wished to say that the evidence he could tender would have struck him with astonishment.

Mr. Whichcord said he should feel perfectly at liberty to call upon any one of the witnesses on either side to come to him afterwards if he thought it necessary.

The counsel on both sides agreed that this might be done.

Mr. Glynn called the surveyor who took out the quantities.

Mr. Stephen B. Wilson, surveyor, 27, Walbrook, stated that he prepared the quantities as produced for the purpose of obtaining a builder's estimate. He himself prepared an estimate. It was an approximate sum arrived at by comparing this with other similar buildings. Mr. Paraire gave him the drawings which had been put in, and likewise attended him to explain the way in which he wished the works to be done. The quantities were not taken out in detail. He had previously made an estimate for the Holborn, and also for the Horseshoe. He took generally the quantities for the brickwork, the slating, the floors, and the main items; and he made a comparison between these and the other buildings which he had named. He took the cube of the several buildings, and then he added to or deducted from it, as the case might be. He formed that into a bill, and the result was the estimate now produced, 65,000*l.*, and a builder subsequently accepted that price. He communicated with Messrs. Green & King, builders, and saw one of them at Mr. Blair's, and explained the way in which he had arrived at the estimate. After they had gone into the particulars, Mr. King said he should be happy to give a tender if witness would write him a letter naming the approximate quantities. He wrote a letter to the firm on the 7th of January, 1879.

Mr. Ward remarked that that letter was not strictly evidence, but he should not object to it if the arbitrator wished it to be put in.

The arbitrator observed that Messrs. Green & King were a link in the chain, and he thought it was quite relevant to ascertain what took place between them and this witness.

Witness stated that he took the superficial quantities of the roofs, floors, and galleries, and he deduced the prices from the other buildings. The letter of the 7th of January was then put in. In it he wrote, "I approximately estimate the structural cost as follows:" and then gave the details. Messrs. Green & King in their reply said,—"After going into the probable cost we are of opinion that the structure can be built for the sum of 65,000*l.*"

Mr. Ward.—Is the witness not suing the company for the value of his work in preparing these estimates?

Witness.—I am.

Mr. Ward.—Then we shall in all probability meet again upon that question.

Examination continued.—He afterwards prepared a schedule of prices. The schedule was put in, and was dated September, 1879. He consulted Mr. Paraire in the ordinary way. He afterwards attended before the directors with that schedule of prices, and they were approved of generally. They went through them item by item, and Mr. Wingfield, one of the directors, said he knew as much about building and the price of a rod of brickwork as any one in London.

Mr. Glynn intimated that that concluded the case for the claimant, and before proceeding to sum up the evidence, he remarked that though his learned friend, Mr. Ward, seemed to think that in the course of the hearing he had cast some reflections on the directors of the company, nothing was really further from his thoughts, and he unconditionally withdrew anything that could be so construed. There was a noble lord on the board, and he was rather anxious to know what learned lords knew about these things; and, of course, the directors looked after their fees; but that was only what everybody did after having done his work. Mr. Paraire, in working for this company had a great many masters, and he appeared to have done his work to the satisfaction of most of them; and it was important to notice what they wished to be done and what they determined to build. Mr. Paraire was appointed the architect by resolution, and in pursuance of that resolution he did this work. There were certain preliminary services, which were not part of the work of the architect, and for these he claimed 52*l.* 10*s.* This included a structural plan, which, by his advice, was put upon the prospectus of the company; and also charges for attendance at several of the directors' meetings. For all such preliminary services it was well known that the solicitors, the surveyors, the directors, and the promoters, expected to be paid fairly, and more than fairly, because it was disagreeable work, and it was uncertain whether the company would float. The claim in connexion with the application for a licence was virtually admitted. The next item was 1,625*l.*, being 2½ per cent. on the tender of 65,000*l.* which Messrs. Green & King said they were prepared to give. He did not care whether the arbitrator was of opinion that they were prepared to carry that out or not. Mr. Cates and all the witnesses were of opinion that it did not make any difference, as regarded the quantities, whether the tender was accepted or not. Mr. Paraire had done his work, and was entitled to the scale of payment laid down by the Institute of Architects. If the directors had not got a tender, it was their fault. They had chosen to form a ground-rent, and not build the Alcazar at all; but they could not avail themselves of that to refuse to pay these charges. It was exactly the same as an ordinary case of selling property. If you bring buyer and seller together, and the seller then said, "I will employ you no longer; I will not sell," the person who introduced the buyer to the seller is entitled to his commission. They were dealing with professional gentlemen, whose charges were not to be measured in the way that the Alcazar Company seemed to think they should be measured. It was not a mere question of time, as with a cabman, nor of the cost of paper, paint, or pencils. He was entitled to fair remuneration, according to the recognised scale in the profession, and that amounted to 1,625*l.* The next item was 325*l.* for getting the builders' tender. Mr. Paraire was instructed by the Board to assist in preparing the quantities which it was desired to get out in a great hurry. For these services, which had nothing to do with the other work, he charged according to scale, and there was no evidence impugning the accuracy of the claim. The only other item in dispute was 680*l.*, for obtaining the necessary capital. Mr. Paraire stated that he had bargained with the directors that for financing the company he was to receive 1½ per cent. on the amount required for the building, and that he succeeded was not refuted, though Mr. Allbutt was cross-examined for two hours and a half. There was a resolution of the company showing that the directors very well knew he was endeavouring to get the money, and if he had not been able to get it he was entitled to fair remuneration for the work he did. But his contention was that he did get it. Mr. Allbutt, a financier engaged by Messrs. Bolton & Co., for the purpose of carrying this matter out, stated that he was prepared to provide the money if the Alcazar Company had gone on; and Mr. Paraire having introduced Messrs. Bolton & Co. to the directors was entitled to his commission of 1½ per cent. Mr. Paraire had been kept out of his money for a very considerable time, and he claimed interest, which the arbitrator was entitled to give on the amount which he might award. The very small sum of 1,000*l.* was ordered to be paid into court by the Master, and the defendants would have to pay interest upon that as well as on the amount that was due, because it was only paid into court as security for the claim, and they would otherwise not have been entitled to bring this action at all. In conclusion, Mr. Glynn thanked the arbitrator for the very great attention he had given to this matter, and for his kindness in consulting the convenience of the counsel engaged.

Mr. Winch, replying on behalf of the Alcazar Company, stated that, when the directors had this bill before them, they consulted gentlemen of Mr. Paraire's own profession, and obtained from them a decided opinion that it was four times as much as it ought to be, and therefore they were bound to dispute it. But that they did not wish to do so unfairly was shown by their agreeing to send it to one who stood at the top of Mr. Paraire's own profession to be decided. There were twenty guineas for services before the company was formed, about which he would not trouble. Then there were thirty-six guineas for the large coloured elevation, which was before them, as to which the arbitrator could form an opinion. The substantial part or claim was the percentages. Now, 2½ per cent., if justifiable at all, was justified upon the basis of a document very well known,—the professional charges,—which said that if an architect had drawn out plans complete, with elevations, sections, and specifications, the charge was 2½ per cent. commission upon the estimated cost, and if he had procured tenders the charge was ½ per cent. extra. But Mr. Paraire's own evidence showed that he had not brought himself within that rule. There was no specification, or drawings, and no plan of the roof. Therefore the claim must fall back upon work and labour. Of course, as the arbitrator had intimated, if a man was asked to design a building, and by a stroke of genius immediately sketched off the key-note of the whole thing, it might be worth 1,000*l.*, but that was a gift which ordinary men did not possess. If, however, the arbitrator saw in this design an unusual display of genius, by all means the claimant must have a due sum for it. He would take Mr. Paraire's own figures (5*l.* a day) for his ordinary work. Allowing these plans to have taken eight weeks, and including Sundays, it would give 280*l.* The addition to be made for genius he would leave to the arbitrator, merely remarking that it was a building which was not put up, and did not succeed. The design was not so brilliant as to induce the public to come forward and subscribe 65,000*l.* He did not say that a man who had to use his brains should only be paid for mere mechanical labour; but he should be very much astonished if the arbitrator put the value on the plaintiff's brains in preparing these plans at 1,400*l.* Then as to the claim for 325*l.* That was put in the summary account as ½ per cent. for getting a tender; but as his friend, Mr. Glynn, could not argue that there was a tender here, it was now put on the ground that Mr. Paraire was obliged to give the surveyor an immense amount of assistance in order that he might be able to get out the quantities. But if he did, it was all thrown away, as the surveyor did not pay much attention to it. He squared the floors and the roof, and then got hold of another plan to compare the figures with, and said that was near enough. Messrs. Green & King's letter was no tender, but simply an expression of opinion that the work could be done for a certain sum. It was an estimate obtained to put before the shareholders to give them some sort of opinion what the building would cost, and that some sort of opinion was 65,000*l.*; but whether it could be erected for that was very shadowy. They would agree to do it at Laxton's prices, and well they might, seeing that they were tiptop prices, and tenders were always a percentage under them. In giving the surveyor his assistance, Mr. Paraire was occupied five or six days, and surely this was mechanical work, to be paid for at his own valuation, 5*l.* a day. Then came the last item, 680*l.*, for financing, and the question was whether the plaintiff did find any-

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* We remember a distinguished painter once having been able at an emergency to successfully set and bind up a broken arm, with a splint made of an old palette, a number of paint-brushes, and his painting-rag; on the arrival of the doctor nothing more was found to be necessary.

body who was willing to advance the money. Now, Mr. Allbutt's offer was that he was prepared at once to proceed with the building, provided the undertaking was handed over for reconstruction, three directors nominated by the company to take seats on the reconstructed board along with three appointed by the capitalists, but no liability could be entertained beyond a mortgage of 30,000*l.* The directors would have accepted even this modified contract conditionally on having 5,000*l.* down, but the parties could not agree. He therefore submitted that Mr. Paraire had entirely failed to obtain the 65,000*l.*, or an offer of it. Where a man had made a specific contract of this sort, he either got all his commission or nothing; but the directors did not wish him to be without remuneration, and would give him 5*l.* a day for the time he was engaged in the matter. The Company, he was glad to say, were well able to pay whatever might be awarded, but the directors felt they were not justified in drawing a cheque for this 3,000*l.*, and they had adopted the only course a body of gentlemen ought to do, by submitting it to arbitration.

This terminated the proceedings, the Arbitrator taking time to consider his award, and if necessary, to consult professional gentlemen named by either side.

WILTSHIRE ARCHÆOLOGICAL SOCIETY.

STONEHENGE.

THE annual meeting of this Society was held last week at Bradford-on-Avon. The general meeting of members was held on Tuesday in the Town-hall, Sir Charles Hobhouse, bart., presiding.

The report read by the secretary (Rev. A. C. Smith) showed that the Society, both numerically and financially, was in a flourishing state; but during the past year the Association had lost very many useful and worthy members. The attention of the committee had been directed to the present condition of Stonehenge, some of the stones of which were leaning at such an angle as to render their fall at no very remote period a certainty. They had, therefore, communicated with the Society of Antiquaries, who had appointed a committee to report as to what steps should be taken in the matter, and should they deem that immediate steps were necessary, it would remain to approach the owner of the property and ask his consent to allow the necessary operations to be performed.

On the motion of the Rev. W. C. Kis, seconded by Mr. T. B. Saunders, the report was adopted.

Mr. Saunders deprecated any attempt to restore Stonehenge, remarking that such a proceeding would result in having Stonehenge such as it was never seen by the Druids or those before them.

The officers of the Society having been re-elected, with Mr. H. E. Medlicott, of Potterne, appointed as general secretary, in place of Mr. C. H. Talbot,

Sir Charles Hobhouse delivered an interesting inaugural address. He said he felt himself to be an absolute tyro in archæology. Most of his life had been spent in India, and but for a train of circumstances which occurred soon after his residence in Wiltshire he would never have acquired a taste for the study of the subject. After he had been poring over the parish registers or some old terrier of the days of Elizabeth, he was inclined to ask of the art of archæology,—*cui bono?*—What good is it? He supposed he need not answer that question in such an assembly; but still, it seemed to him that even the enemies of archæology, if they would consider a little, would find that they themselves spent a great part of their time in the midst of that study which they affected to despise. The life of a man was spent in three worlds,—the past, the present, and the future,—and all the study of the past history, biography, &c., was really the study of archæology. The wants of every-day life were to a great extent dependent upon that study. Any one choosing a house in the country or the suburbs of London would not prefer a house in the modern style of architecture,—that meant a square door in the centre, two square windows on either side of the door, and three square windows above. They would rather choose a house built in the Elizabethan or Hanoverian style, making use of modern appliances for internal comfort. But the taste for art in architecture was growing out of the increasing love for archæology. The comparison between a modern building and one the produce of a remote antiquity showed that there was still much to be learnt. When travelling in India he was struck with the wonderfully large water-tanks, the sides of which were made with huge blocks of stone laid one on another, without any kind of cement or clamps. No repairs, he was told, were ever needed; how was it that in the case of modern reservoirs they did not profit by the lessons of antiquity? Sir Charles then described the beauties of the Hindoo temple at Agra, and the emblematical royalty of Akbar's camp at Futtehpore Sikri, each of which was, thanks to the climate, in almost as good a condition as when constructed. He did not mean to say that we should imitate those things, but he thought they taught us moderns many a lesson in the science of architecture. He further described the wonders of the rock-cut temples in Western India. Archæology, he said, was the history of the one of our rural parishes, and in miniature the history of the whole country. To illustrate this he gave the history of his own parish (Monckton Farleigh) from the time of the compiling of the Domesday-book, and traced the analogy between it and the ecclesiastical and general history of the changes and development of the country.

The Rev. Canon Jackson, referring to the "restoration" of Stonehenge, said that all that was intended to be done was to lift up the trilithon which had fallen, and the proper place of which was well known.

The Rev. Canon Jones gave a lengthy account of the ecclesiastical history of the town of Bradford-on-Avon, and the various churches and other objects of archæological interest which it contained, especially the Saxon church recently discovered. In the afternoon the members thoroughly examined the parish church, the interesting old Saxon chapel, the Church-house, the Shambles, the old Market-place, the site of St. Olave's Chapel, Kingston House, the chapel on the Town-bridge, the chapel and almshouses of St. Katharine, Tithe-barn, St. Mary's Chapel, and Christ Church, all of which were very ably described, and their leading points of interest were shown by the Rev. Canon Jones.

After the town had been thoroughly inspected, dinner was provided at the Swan Hotel, Sir Charles Hobhouse, bart., presiding; and, subsequently, a *conversazione* was held in the Town-hall.

The meeting was continued on Wednesday. The members started in carriages from the Town-hall, the first halt being made at Westwood, where the interesting little church was described by the Rev. Canon Jones, who traced the history of the parish from the early part of the eleventh century. He called particular attention to the remains of stained-glass windows. The next halt was at Stowford Manor-house, which was thoroughly inspected by the visitors, and described by Canon Jones. This old Elizabethan house is now in the occupation of Mr. James Wadman. The next halt was made at Farleigh Castle, the ancient residence of the Hungerford family. The old ruins and chapel were inspected by the party, but no description was attempted, as the time pressed. The next halt was made at Beckington, where luncheon was partaken of, after which the party proceeded to Seymour-court, and thence to Road Church. North Bradley Church was examined, and the party returned to Bradford about six o'clock. In the evening a *conversazione* was held in the Town-hall, at which an interesting paper was read by Sir Charles Hobhouse, bart., on "Some Account of Monckton Farleigh," and one by Mr. F. Shum, F.S.A., on "Some Notes on Gainsborough, and his connexion with Bradford."

On Thursday morning, the members of the Society met at the Town-hall, at ten o'clock, and proceeded in breaks to Holt. Thence they went to Monckton Manor House, and thence to Broughton Gifford Church. They next visited Great Chalfield Manor House, where the Rev. Prebendary Jones acted as *cicerone*, and explained that this was one of the finest manor-houses in England, and was built by Sir Thos. Tropenell, who died in 1490. In the little church adjoining the manor-house is a chapel built by Sir Thomas Tropenell, and at one time it was enclosed by a carved stone screen, which is now removed so as to form an enclosure to the church. The walls of the chapel, which are now only whitewashed, were once decorated with paintings representing some of the saints, and it was stated that they were whitewashed by order of a previous vicar, who found that the congregation paid more attention to the pictures than to his sermon! The outlines and some of the colourings of the figures are still visible, but it is the intention of the present owner of the property (Mr. Fuller, of Neston Park) to endeavour to restore them. The arms of the Tropenell (now known as the Trapnell) family are emblazoned on the cornice of the stone screen and at the intersections of the roof of the chapel, showing the quarterings with th great families in marriage,—the Percys, the Ludlows, and the Roches. Luncheon was given in a large tent to about 150 guests, when the president of the Society (Sir Charles Hobhouse) expressed the thanks of those present to Mr. Fuller for his kind and liberal hospitality on the occasion, stating that it was about twenty-four years since the visit of the Society to this ancient and interesting manor.

The party visited other places of interest, and in the evening the meeting was brought to a close.

FROM ABROAD.

Monument to Maximilian, Mexico.—A decree has been issued by the State Government of Queretaro, in Mexico, determining upon the erection of a monument to commemorate the execution of the Emperor Maximilian and the Generals Miramon and Mejia, the monument to consist of truncated pyramids.

International Exhibition, Shanghae.—It is reported that the year 1883 will witness an international exhibition in Shanghae, now in contemplation.

Archæological Discoveries, Carthage and Utica.—M. Herrison, who is said to have made important archæological discoveries in Carthage and Utica, is about to publish an interesting work on the subject. He arrived in Paris lately.

Beneck Prize.—The University of Goettingue has announced that the Beneck prize will be awarded to the best essay on the following subject, to be written in German, Latin, French, or English, viz.—"A general exposition of the development of the Italian people, entering into details to show what the plastic arts and the drawing of the Italians owe to non-Italian nations." The essays must be sent in before the 31st of August, 1883.

A BUILDER'S CLAIM.
WRITTEN ORDERS AND CERTIFICATES.

GOODMAN *v.* LAYBORN.

THIS case was argued on August 1st, before a Divisional Court, consisting of Mr. Justice Grove and Mr. Justice Lindley, and came before the Court on motion for judgment on the report of an official referee. Mr. E. S. Roscoe represented the plaintiff, the builder, and Mr. Woolf the defendant, the employer, a gentleman residing at Ramsgate. It appeared from the statements of counsel that this claim arose out of two contracts, one to complete certain houses at Herne Bay, and the other to alter a house at Ramsgate; there was also a third claim by the plaintiff for a small sum for other work, in respect of which the official referee awarded 8*l.*, and upon which no dispute arose. In the case of the Herne Bay contract the referee had awarded the sum of 27*l.* odd for extras, and to the finding the defendant took exception, on the ground that by the terms of the contract an order in writing should have been given, and, this not having been done, that the builder could recover nothing. It was contended by the plaintiff that the words of the contract, which were that no extra work should begin without a written order, referred only to the commencement of the work, and were not a condition precedent to payment for work actually ordered and done. As regarded the Ramsgate contract, there had also been no written orders, but the architect had received the builder's account for extras, had placed his own figures in the margin, and had thereby largely reduced the builder's claim. At the foot he had placed the amount of his calculation, and had before signing his name (W. G. Osborne) written "Balance due as per conditions, 125*l.*" It was contended by the plaintiff that this was a final decision of the architect, and that though the word "certificate" was placed in the contract, yet that in effect all that was required was a final decision, which this was. The employer also claimed penalties against the builder for the non-completion of the work within the time specified in the contract. The Court, in giving judgment, disallowed the sum claimed for the Herne Bay extras, on the ground that by the contract written orders were necessary, and that, no certificate having been given by the architect, their absence was a bar to the recovery of any sum whatever by the builder. As regarded the Ramsgate contract, they held that no particular form of document was necessary for a final certificate, as required by the contract, so long as it showed the final decision of the archi-

tect, and they considered that this document did away with the necessity for written orders, and they upheld the report as to the sum awarded for extras in respect of this contract. As to the penalties, the Court desired a further report from the referee as to the circumstances under which the delay in completing the houses took place, and referred the report back to the referee for further information on this point.

[This case clearly is another example of the stupidity of builders in not sticking to the terms of their contracts. They should refuse to do extra work without written orders, and should not trust to the good nature of their employers, which is not to be relied on. It is clear, too, that architects should always give written orders without being asked to do so by the builder; they thereby save their employers immense annoyance and expense, and, indeed, are only fulfilling their plain duty. But it is astonishing how they continue to give verbal orders for extras when the contract plainly requires them to be in writing.]

THE STREETS OF BERLIN.

Owing to the execution of the new system of sewers in the German capital, the length of the principal streets of the city has recently been exactly measured. The celebrated avenue Unter den Linden has a length of 1,350 mètres, or less than seven furlongs; Wilhelm-street, the head-quarters of the Ministries, is 2,000 mètres long; while the well-known Friedrichs Strasse has a length of 3,060 mètres, or not far short of two miles. Of the streets which extend beyond the limits of the city proper, Müller-strasse has a length of 3,600 mètres, Kurfürstendamm 3,925, See-strasse 4,085, Kaiserstrasse 4,215 mètres. The longest series of streets running in one continuous line with unbroken rows of houses is that of the Friedrich-strasse, with its continuations the Chaussée and Müller streets, the aggregate length of which is 8,440 mètres, or upwards of five English miles.

ART-UNION OF LONDON EXHIBITION OF PRIZES.

It was a very generally-expressed opinion amongst those who were at the private view in the Art-Union Gallery last week, that the selection of works by the prizeholders showed a great advance on that of former years. We hope that this may be taken as evidence of that improvement in the taste of its members, and that power of discriminating between good and bad works, which it has been the great aim of the Institution to effect. Certainly to those who recollect the time when Mr. Shayer's gipsies and donkeys, and the roast beef and plum pudding of Pidding and Clater entered largely into the annual gathering, the change appears very great.

The most prominent works having already been noticed when reviewing the galleries from which they have been selected, any lengthened notice is unnecessary. Still there are one or two points worthy of mention. We are glad to observe that sixteen works have been chosen from the Royal Albert Hall Gallery. If artists could be induced to send their works to this gallery when they have been accepted at the Royal Academy, but not hung for want of room, as in the case of a considerable number of pictures lately shown here, this would soon become an important exhibition, and artists would find their advantage in it. Amongst the works from the Hall specially worthy of notice are No. 31, "St. Michael's Mount, Cornwall," by Mr. Sydney Hodges; and two landscapes, Nos. 43 and 48, by J. Anderson, admirable for careful execution and finish, and the truthful effect of shadow on the surface of the water.

The work of greatest importance in the gallery is the "At last" of Mr. Arthur Stocks. An old dame has just received a letter from her son, or perhaps grandson, probably announcing that he was on the point of going into action, and now he unexpectedly arrives to "set her heart at rest." It is a work full of sentiment, and well and solidly painted, and it is to be hoped it will find a suitable resting-place in Quebec, whither it is going; it is rather large for a house of ordinary size.

Amongst the water-colours, the principal is "The Loss of the *Revenge*," by Mr. Oswald Brierly, which formed the subject of the engraving given for the past year. For effective treatment and truthful rendering of light and shadow on the surface of water, "The Ferry on the Trath," by Mr. J. J. Curnock is remarkable.

We have already called attention to the exceptionally liberal presentation work prepared for the current year's subscribers,—a series of five plates from Mr. Frith's well-known pictures, "The Road to Ruin."

PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

3,223. T. Barnby, Birmingham. Folding or camp furniture. July 23, 1881.

3,250. D. Grove, Berlin. Steam cooking apparatus. July 25, 1881.

3,261. T. W. Helliwell, Brighouse. Making the glazing of glazed structures impervious to dust, air, and water. July 26, 1881.

3,276. C. E. Bulling, Camden-street. Adjusting the position of swing looking-glasses, sashes, doors, &c. July 26, 1881.

3,303. J. H. Johnson, Lincoln's-inn-fields. Manufacture of artificial stone and marble. (Com. by La Société Anonyme de Certaldo, Paris.) July 28, 1881.

NOTICES TO PROCEED

have been given by the following applicants on the dates named.

July 26, 1881.

1,252. J. W. Lewis, Halifax. Raising and lowering window-sashes, &c. March 22, 1881.

1,277. H. G. Grant, Manchester. Furnaces or stoves. (Com. by A. Prevot, Bergerac, France.) March 23, 1881.

1,327. T. Morgan, Charing-cross. Magazine heating-stove. (Com. by O. Elterich, Nuremberg.) March 24, 1881.

1,483. J. Ingleby, Manchester. Cocks, valves, &c. (Com. by R. Meyer, Breslau.) April 5, 1881.

2,442. J. L. Corbett & W. Lochhead, Glasgow. Taps or valves, &c. June 3, 1881.

July 29, 1881.

1,304. J. Rettie, Hatton-garden. Binding for scaffolding, &c. March 23, 1881.

1,309. A. C. Henderson, Southampton-buildings. Safety wicket and grating for street-doors. (Com. by J. M. A. Montclar, Paris.) March 24, 1881.

ABRIDGMENTS OF SPECIFICATIONS

Published during the Week ending July 30, 1881.

5,293. E. P. Alexander, Southampton-buildings. Furnaces and fire-places.

Instead of the usual fire-bars, rectangular perforated cast-iron gratings are used, which have ribs on them to lift the fuel up and allow the air to have free access. (Com. by C. Nikiphoroff, Paris.) Dec. 17, 1880. Price 6d.

5,295. W. Phillips, Leeds. Window-sashes, &c.

A vertical groove is formed in each sash-stile to admit a round metal rod which is pivoted in the centre of the sash-stile, and so arranged that it may be moved outwards, carrying the rod clear of the groove and into a recess in the pulley-stile, when the sash can be reversed. Dec. 17, 1880. Price 6d.

5,306. T. H. Goodson, Berlin. Automatic apparatus for preventing waste of water in water-closets.

The valve-box contains two check valves; the upper valve's stem buts against the underside of the closet seat. Between the two valves is a pipe leading to an air-vessel. On the seat being depressed the upper valve forces the lower valve on to its seat and prevents any more water passing to the closet basin, but allows it to enter the air-vessel, partly compressing the air. On the seat being raised the upper valve closes the supply-pipe and then raises the lower valve, when the compressed air in the air-vessel forces the water out and flushes the basin. Various modifications are shown. (Com. by H. E. T. Goodson, Berlin.) Dec. 17, 1880. Price 6d.

5,308. J. Wiley, Darlaston. Clips for gutter spouting.

The bar has the two ends bent downwards. A hole is formed near the top of each fork of the clip. The bar is placed in position by pushing each bent end horizontally through the holes, when they fall downwards by their own weight, and the bar cannot be blown or shaken out of its position. Dec. 18, 1880. Price 6d.

5,333. C. R. Stevens, Lewisham. Valves and shafts and caps and cowls for ventilating.

This is an improvement on patent granted on the 13th of December, 1877, in various minute details, which are shown in forty-two figures. Dec. 20, 1880. Price 10d.

5,356. E. de Pass, Fleet-street. Combined washstand and bath.

A lid is fitted to the top of the bath, hinged at the back, in which a washing basin is fitted. (Com. by A. Avon, Paris.) (*Pro. Pro.*) Dec. 21, 1880. Price 2d.

* Compiled by Hart & Co., patent agents, 28, New Bridge-street, E.C.

5,368. J. H. Owen, Dublin. Reversible cresset grate.

The cresset is hung on pivots, and has the front and back formed of bars while the sides are iron plates. Plates are arranged to slide in over the bars. The fresh coal may therefore always be arranged to be beneath the live fire and the smoke is consumed. (*Pro. Pro.*) Dec. 22, 1880. Price 2d.

5,414. A. C. Farrington, Shelfanger. Apparatus for giving alarm and securing doors, windows, &c.

The bolt is forced against a coil-spring. A catch is fitted to draw the bolt in, which, when liberated, is shot forcibly back by the spring, and can strike a gong, &c. (*Pro. Pro.*) Dec. 23, 1880. Price 2d.

5,424. H. Johnson & B. Stuart, Keymer Junction. Apparatus for pressing or moulding bricks.

A box mould is made with its sides and ends hinged, so that when removed from the outer die or box, the brick, &c., can easily be removed. Dec. 24, 1880. Price 6d.

5,439. H. Payton, Birmingham, and W. S. Dackers, Balsall Heath. Attaching door-knobs to their spindles.

The end of the spindle is split longitudinally at opposite sides. The square hole in the bush of the knob is divided by a partition into two parts. When the spindle is passed through the door, the knob is forced on the elastic forked end, which holds it tight. Dec. 24, 1880. Price 6d.

AWARDS TO JOURNEYMEN PLUMBERS.

The following is a list of the awards made in respect of the works sent by journeymen plumbers to the recent Exhibition of Sanitary Appliances at South Kensington. The judges, as appointed by the Committee of the Parkes Museum of Hygiene, were Messrs. John T. Bolding, W. Paton Buchan, A. A. Common, and S. Stevens Hellyer.

Awards of the First Class, for Special Excellence of Workmanship, were given to George Davis, J. W. Hart, George Macfarlane, and G. Taylor. For Excellence of Workmanship to John Wm. Fuller, W. T. Otway, Thomas Sheppard, and J. Vance.

Awards of Merit for Fair Workmanship were given to David W. Buchan, Thomas Cranston, Thomas Harrison, Edward Lyne, James B. MacFarlane, James Wood, John Wyse, and A. J. Nickels.

MONUMENTAL EXHIBITION, LISBON.

An Exhibition of the Monumental Art of Portugal is to be shortly opened in Lisbon. Official intimations have been made to the several civil governors of all the districts, in order that they may invite the municipal councils, parochial Boards, confraternities, and other establishments and corporations of that kingdom, to entrust to the committee appointed for the management of the Exhibition with such objects as may be selected by the agents of that committee out of those they may possess for the said exhibition, on condition of their being returned after its termination.

STRATTON.

Several improvements are being carried out on the estate of the Earl of Northbrook, K.G., at Stratton, near Winchester. The homesteads on some of the farms have been entirely rebuilt on approved principles, and the farm-houses remodelled. Only one pair of cottages has at present been erected; but more are contemplated. The whole of the farm buildings and cottages are built of bricks and local-headed flints pointed with black mortar. The cottages are covered with plain tiles, and the farm-buildings with slates, except those at the East Stratton Farm, which are covered with Poole's patent tiles. The whole has been carried out by local tradesmen from the designs and under the superintendence of Messrs. Raynbird & Sons, surveyors and land agents, of Basingstoke, who are also erecting other homesteads on the estates of Lord Templemore, at Preston Candover, near Alresford; and of Mr. W. W. B. Beach, M.P., of Oakley Hall.

Art Exhibition at Brussels.—The Triennial Exhibition of Painting and Sculpture was opened on Sunday afternoon at the Palace of Fine Arts, in the presence of the King and Queen. The Exhibition, which is large and varied, is reported to maintain the honour of the Belgian school. There are also many pictures from France and Germany.

OBITUARY.

Mr. Selim Rothwell, Artist.—The death of this gentleman was sudden, and is said to have been expedited by his exertions in getting up an exhibition for the benefit of the new infirmary at Bolton. Mr. Rothwell was born in Bolton in 1815. His father, Mr. Edward Rothwell, was a house-painter and decorator. Mr. Selim Rothwell was educated at the Bolton Grammar School, and was afterwards trained in his father's business, being taught the art of drawing at the Mechanics' Institution. He was a pupil of Mr. George Berry, the drawing-master of that town, a man of considerable ability and a friend of the late Charles Swain. On his removal to Manchester, about twenty-five years ago, whilst continuing to practise as a drawing-master, he became in an increasing degree a landscape-painter. The charm of Mr. Rothwell's drawings of the buildings of Italy was widely acknowledged. Brittany and Normandy were also favourite resorts. Besides wielding the brush with skill, Mr. Rothwell was an enthusiast in the use of the etching-needle. He was one of the early members of the Manchester Academy of Fine Arts, and his business capacity and the esteem in which he was held by his colleagues gave him an active part in the management of its affairs, first as a member of the council, and latterly as its literary secretary. In 1877, he printed for private circulation a small volume entitled "Scraps from an Artist's Sketch-book." It contained some of his Continental impressions, and was illustrated by photographs from his drawings.

SURVEYORSHIP ITEMS.

Witney.—A meeting of the Highway Board for the Bampton East Division was held a few days ago for the election of a road surveyor for the district, in the room of Mr. W. A. Richards, resigned. The value of the appointment is 120*l.* There were upwards of thirty candidates, five of whom were selected for final decision. The ultimate result was the election of Mr. Jasper Taylor, inspector of nuisances to the Witney Rural Sanitary Authority. The voting was as follows:—Taylor, 16; Hemmings, 4; Richards, 3; Wells, 0; Bailey, 0.

Horsham.—We see by the report of Special Sessions, held at Horsham on the 23rd ult., that Mr. Charles W. Whitaker, C.E., of 6, Great George-street, Westminster, was elected County Surveyor for West Sussex. Mr. Whitaker is the son of Mr. Thomas Whitaker, late County Surveyor for Devon, and City Surveyor for Exeter, and is carrying out the drainage and waterworks at Budleigh Salterton, drainage of Chard, and other works in the West.

FURTHER SALES OF BUILDING LAND AT STREATHAM, WILLESDEN, AND WOOD-GREEN.

Within the last fortnight there have been several large sales of freehold building land in different parts of the suburbs of London. A few days ago Messrs. Debenham, Tewson, & Co. offered for sale a portion of an estate at Streatham, containing about nine acres, which has been laid out for building upon. The estate is close to Leigham Court-road, and within a few minutes' walk of the Streatham Hill, Tulse Hill, and Lower Norwood Railway Stations, the site commanding some beautiful and extensive views. The several plots have frontages of 25 ft. to a new road called Knollys-road, 50 ft. in width, and from 200 ft. to 250 ft. in depth. The stipulations provide that no house is to be erected on any plot of a less value than 600*l.*, nor within 20 ft. of Knollys-road. No tavern or hotel is to be erected on the estate, and it is also provided that no business whatever is to be carried on on any plot. The sale took place at the Greyhound Inn, Streatham Common, when there was a large attendance, twenty-four plots being disposed of at an average of a little more than 5*l.* per foot frontage, or about 125*l.* each. The entire proceeds of the sale amounted to 3,200*l.*

Messrs. Croucher & Co. offered for sale, at the King's Arms Hotel, Wood-green, a portion of the Alexandra Estate, which was stated to be bounded on two sides by the pleasure-grounds of the Alexandra Palace, with good railway accommodation, the estate being in close proximity to five railway stations. The drainage was said to be constructed on the most approved sanitary principles, and in accordance with the requirements of the local authorities. The several plots have frontages of 20 ft., with a depth of from 100 ft. to 130 ft., and were stated to be suitable for the erection of shops, and other residences. Thirty-five plots were sold at prices ranging from 60*l.* to 75*l.* each, whilst a corner plot, having a frontage to Crescent-road of 110 ft., and to Albert-road of 59 ft., realised 153*l.* The sale altogether produced 2,450*l.*

Messrs. Baker & Son also sold at the Auction Mart, fifteen acres of freehold land in Harrow-road, Willesden, which realised 4,380*l.*

AMERICA.

The *Scientific American* (New York, July 23) devotes half a page to the aqueduct over the Cabin John Creek conveying the Croton water to Washington. This bridge, which is a single span of 220 ft., with a height of 101 ft., is stated to be the largest masonry arch in the world. It seems surprising that a work of such magnitude should not be better known; but the explanation given is that it was completed during the Civil War, and that at the time it was considered unadvisable to draw the enemy's attention to the means by which the capital received its supply of water.

A description is given in this number of the new town which has sprung up a few miles south of Chicago, under the auspices of the Pullman Palace-Car Company. In June last year, the site of what promises to be a large and prosperous community was a broad stretch of prairie; but to-day the town of Pullman presents an appearance superior to that of any manufacturing centre in the States. It contains a handsome railway station, workmen's dwellings, constructed with every consideration for convenience and health,—a park,—beautifully laid out,—a large hotel, market-hall, stores, arcade, &c.; whilst an art-gallery and public library are in course of construction.

"Art on the Stage" is the title of an interesting paper in the supplement of the same date, on scene-painting. The materials used and the system employed in this much-ignored but really important branch of painting are explained at full length; and hints are given for the employment of tin-foil, bronze powders, and leaf-metal, which can hardly fail to be of value to decorators who have to look more to scenic effect than to careful painting for close scrutiny.

GET ORDERS FROM PRINCIPALS.

KAY *v.* ROBERTS.

In the Salford County Court, before Mr. J. A. Russell, Q.C., Mr. Kay, plumber and glazier, Prestwich, sued Mr. C. J. Roberts, solicitor, of Rochdale and Manchester, for 13*l.* odd alleged to be due for work done in the erection of certain cottages at Prestwich. Mr. Bradbury, barrister-at-law, appeared for the plaintiff; and Mr. Hockin for the defendant. It was stated by Mr. Bradbury that in 1879 Mr. Roberts was building seven cottages at Prestwich, that a man named Joseph Buckley was employed by him to superintend their erection, and that Buckley on defendant's behalf applied to plaintiff to tender for certain plumbing and glazing work required to be done. Plaintiff sent in an estimate, which was accepted, and did the work, for which he was paid by the defendant. These particulars were mentioned in order to show that Buckley was evidently defendant's agent in the matter. Subsequently defendant erected six other cottages,—or five and a shop,—at the same place, and in October of last year Buckley came again to plaintiff and asked him to send in a tender for the plumbing and glazing. Plaintiff sent an estimate accordingly to Mr. Roberts, offering to do the work for 16*l.* 10*s.*, and he engaged, if it was determined to make a shop of one of the cottages, to glaze the window for three guineas. Two or three days afterwards Buckley told the plaintiff that Mr. Roberts had accepted the tender and desired him to do the work. Plaintiff did the work, including the glazing of the window for the shop, and he also did certain extras, the charge for which was now in dispute. In the November following plaintiff received 3*l.* on account, and in December 2*l.* additional. On the 27th day of December plaintiff called again on Mr. Robert, for the purpose of receiving another instalment, but did not get one. On the same day, however, defendant wrote to him enclosing a cheque for 8*l.* on account. Plaintiff sent in his account again on March 27, and then for the first time he heard that Mr. Roberts disputed his liability for the work. In a letter which he had written he said that it was Buckley who was to pay, and that at the time he was not a principal in the matter, but the guarantor of Buckley. That, it was contended, was not so. Plaintiff was called, and gave evidence in support of the statement made by the learned counsel. His Honour asked him who gave the orders for the extras. He replied that he received them from Buckley; and in reply to another question, added that Buckley never told him that he had Mr. Roberts's instructions for those extras.

Mr. Hockin put in a document showing that Mr. Roberts had limited his liability to 16*l.* 10*s.* which had been paid.

His Honour said that the plaintiff should have obtained orders direct for the extras from the defendant, and that there could be no implied authority. He directed a non-suit to be entered. This was said to be a test action.

THREATENING A BUILDER.

At Westminster Police-court, John Davis, 64, labourer, of 31, Romney-street, Westminster, was charged before Mr. Partridge with demanding money with menaces from Mr. David Walker, at Johnson-street, Westminster.

Mr. Walker, manager to the prosecutors, Messrs. M'Lachlan & Sons, builders, of Johnson-street, Westminster, said that morning the prisoner, who was a stranger to him, came to the office and asked to see one of the firm. He gave no name, and on being asked what his business was, he said he wanted to see Mr. M'Lachlan about the concrete work at the British Museum. It was not "put in" as specified, and unless it was made worth his while it would have to be taken out again. The prisoner also said that it would cost the firm 50*l.* to take it up and alter it. The witness asked him who he was, and whether he had been working on the job. The prisoner said he had not, he was a Government inspector, and had access to the place, and had been there eight or nine times. The witness asked him what he expected, and the prisoner said, "I will leave that to you; give me something and you shall hear no more about it." In reply to a question from the witness as to what Governmental department he represented, the prisoner said he came from Woolwich. In reply to the magistrate the witness said the firm were building a new gallery at the British Museum, and great part of the site was concreted.

The prisoner denied that he made any demand for money. Instead of the builders using concrete at the Museum, they had used old brick rubbish, and covered it over with a thin layer of concrete. The contract stated that they should put in a layer of 7 ft. of good concrete, but in some places they had not covered the old bricks and rubbish with more than 4 in. It was a disgraceful piece of work, and ought to be looked into.

Mr. Partridge remanded the prisoner, consenting to accept bail,—one surety in 20*l.*

CONDITION OF FAREHAM.

A correspondent to be relied on, signing himself "Quæstor," makes some serious statements as regards the sanitary condition of Fareham,—statements that show the necessity for immediate interference on the part of the Board of Health. The sewage is poured into the upper part of Portsmouth Harbour; the sewers are partly choked, so that in the principal street when there is heavy rain the contents of the sewers find their way back into the cellars of the houses; the burial-ground is full, and the water supply contaminated. This is brought about, he says, by the pernicious system of supplying closets direct from the water main. "All the water-closets of the small houses, and all the servants' closets of the large houses, with few exceptions, are supplied from the ordinary house supply, without an intermediate tank. Anything more disgusting as well as dangerous cannot well be conceived. When the water is stopped, as it is every night and once or more in the day time, the water receding in the pipes supplying closets sucks in the foul air direct from the closet-pans, and any water remaining in the main or subsidiary pipes is impregnated by this poisonous element, and the poisoned liquid is the first supplied to the houses when the water is again turned on at the waterworks. Any person drinking, say, half a pint of this deadly mixture, which he might readily do if he happened to draw for that purpose the first water in his house when it was turned on afresh, would certainly be very ill, if he did not die outright. Should there be an epidemic in the town, such as cholera or typhus fever, the germs of those fatal diseases would be spread through the town with fearful rapidity from the source mentioned, and from the causes dealt with in this letter nothing can be more probable than an epidemic."

The Local Government Board ought to be applied to if the Fareham Board do not move immediately.

MODERN STONE-CARVERS.

Sir,—At Kansas City, in Western America, more thousands of miles from my pleasant home at Exeter than I am prepared, at the present moment, to quote off-hand, I have just received a pile of *Builders*, and have, amongst other matter, been much interested in the perusal of a paper in one of them upon "Monuments" (the *Builder*, June 11, 1881, p. 741). Exception, however, I think, must be taken to the statement therein that "many of the best stone-carvers at work here" (in London) "are Italians, and the most expert amongst the English ones have studied in Italy"; and again, further,—"At present the phenomenon of the employment of foreign stone-carvers to execute works comparatively simple may, perhaps, point to some deficiencies in our art and technical schools."

The writer of the above is assuredly in error. The best stone-carvers in London are *not* Italians,—they have not studied in Italy, and when comparatively simple works are executed in London, foreign stone-carvers are not employed to do them. Messrs. Farmer & Brindley, Thomas Earp, James Forsyth, and numbers of other good men in London, are daily doing the best possible work, and those in their employ are, as a rule, honest Britons, not one out of hundred of whom were ever nearer to Italy than Saffron-hill! An ordinary percentage of foreigners exists amongst carvers, just as they do amongst all other trades, but the assertion that the highest class or any class of stone-carving in London is in the hands of Italians, cannot be too emphatically denied.

I have always been a rolling stone, and at the present time I find myself, as a relief from business, taking a holiday through the United States. Twenty years or so ago, at this time, I remember I was in Italy earning a miserable pittance there as a carver,—for wages were dreadfully low at the time. I recollect the jealousy of my fellow-workers, and that oftentimes a beetle-browed Italian would scowl darkly, and taunting me with "taking the bread out of his children's mouths," would go through the pantomime of stabbing me. I used to laugh,—for an Englishman's fist is better than an Italian's knife any day of the week. But the incident goes to show what different treatment is received by the Englishman in such countries as Italy and Spain to that he generously bestows upon those he receives in hospitable England.

During the time I was at work in Italy, and I went from one end of it to the other, I saw nothing to suggest that the modern Italians, as a race of workmen, were ahead of, or even level with, the English. The present generation in that sunny land, indeed, pride themselves rather upon the remembrance of past greatness than upon the possession of present skill.

Let any reader go to the first good job he may know of in London where stone-carvers are at work, let him question the artists themselves, and I will guarantee that he will not find more than one Italian in every twenty men.

Harry Hems.

UNFAIR COMPETITION.

Sir,—As one who tried for the surveyorship to a Yorkshire drainage commission, I received a reply that "an appointment had been made fo a gentleman who has long been officially connected with this drainage." Now, if competent, he, of course, is the proper person for them to appoint, and so far I am content to be an unsuccessful candidate; but does it not seem the height of injustice to put a large number of persons to the trouble and annoyance of getting together their testimonials and going through the empty form of an open competition, when, in point of fact, the Board had a suitable man at hand, and whom they, no doubt, always intended to select? The greatest annoyance to me is that I feel I have been "made a fool of"; but to some it is more serious, as, unfortunately, asking for a testimonial often disturbs the good feeling existing between employer and *employé*, creating an idea of discontent with his present lot, on the part of the younger man, which is often most unjust and injurious to his interest; and in the interest of all who are seeking to improve their professional position I must strongly protest against public bodies advertising for surveyors, &c., when they have already made an appointment among themselves. The advertisement in this case was, very strangely, not in your valuable journal, nor in any professional paper, but in local papers, and the qualifications were merely to survey, level, plot sections, and take the management of men, so that it did not appear at all necessary to have been connected with drainage previously. Fair Play.

DAMAGE TO THE LANTERN OF WIMBORNE MINSTER, DORSET.

Sir,—All lovers of architecture and antiquity will be sorry to hear that another act of Vandalism has been committed at this church. The unique external Norman arcading, built of a local brown sandstone, is being repaired in white stone, destroying the whole beauty of the tower.

I am at a loss to account for the use of Bath stone. As a proof that this brown stone can still be obtained, and is used for building purposes, I may mention that Mr. G. E. Street used it in the building of St. Peter's, Bournemouth, and the church at Spokesdown.

Mills Robbins,
Hon. Sec. of the Bournemouth Field Club.

THE MELBOURNE AWARDS.

Sir,—It may support your own observations, and interest and instruct some of your readers, who, like myself, took honours at Sydney in the Art Section and failed to do so at Melbourne, if I ask you to publish the extract I append from a letter written to me by a highly-intelligent settler in Victoria, who takes great interest in art, and has done honour to the old country.

Architect.

"I did visit our Melbourne Exhibition, and but for the catalogue I should never find your contribution. It is situated on the staircase leading to picture galleries, among a group of architects' works; even with the catalogue I should not be able to find it had I not the help of an opera-glass. The staircase is not over well lighted, and this is high up. The *Australian* says that these works had to be put where they are for want of room. If the judges succeed in seeing its merits they must be very painstaking, and have splendid eyesight or good opera-glasses."—*November 27th*, 1880.

DAMP: A QUESTION.

Sir,—I have only to-day noticed a letter with this heading in your paper of the 30th ult. I think the solution is simple. The cellars should not be deeper than the drain-pipe. The water collects in the clay around and under the house, and in the dry weather the atmosphere draws the water out of the ground to the surface. In the wet weather the pressure of the atmosphere has a contrary effect. The occurrence is too frequent to warrant the term "phenomenon." An experienced man should have no difficulty in rectifying this trouble, but it would certainly entail some expense. J. Eberhard.

THE LANCASHIRE AND YORKSHIRE RAILWAY STATION COMPETITION.

Sir,—May I be allowed to call your careful attention to the very recent Lancashire and Yorkshire Railway Company's New Station competition, and the awards?

I have not time this week to forward you a truthful *exposé* of the whole transaction, but I promise to do so next week, when I think I shall be able to show in detail how unjustifiably the premiums have been awarded, and what (as I think) a gross injustice has been done to many very able men who sent in designs.

A Non-Competitor.

Miscellanea.

Friendly Meetings.—A desire for social intercourse on the part of members of the Council of the Royal Institute of British Architects has been prevailing, and with agreeable, not to say useful, effects. Mr. David Brandon, F.S.A., had sought to entertain at dinner on Monday last all the members of the Council, including the country members, but was disappointed to a certain extent in consequence of their absence from home, mainly in search of health and recreation abroad or in the provinces. A pleasant party, nevertheless, responded to his invitation at the Conservative Club, in St. James's-street, including the president, Mr. G. E. Street, R.A., Mr. Barry, Mr. Currey, Mr. Christian, Mr. G. Godwin, Mr. Hansard, Mr. l'Anson, Mr. Wm. H. White, with Mr. G. G. Adams, Dr. Christie, and other private friends, and an agreeable evening was, naturally enough, spent.

The Electric Light at King's-cross Station.—The King's-cross Station of the Great Northern Railway is now lighted by means of electricity, a beginning having been made last week. The peculiarity of the Crompton system (which was described by us some time ago) is that arc lights of large size are used, which are produced by self-regulating lamps, three or four being placed upon the same circuit. There are twelve Crompton lamps within the station, six being placed over the arrival platform, and a similar number over the departure platform. Two other lamps of larger size are placed outside the station building. The interior area lighted consists of two bays, each 880 ft. long and 105 ft. wide, and 72 ft. high, as well as the cab rank adjoining the arrival platform, which is 40 ft. wide. The total area lighted is 220,000 square feet, giving an area of 18,333 square feet, or nearly half an acre, to each lamp. The lamps are suspended at a height of 30 ft. from the platform level, and are arranged on four circuits, the light of each lamp being computed as equivalent to 4,000 candles. The illumination of the platform area is both uniform and excellent. The two exterior lights are estimated at 6,000 candles each, and are placed at an altitude of 70 ft., the lanterns being of clear glass. The current is supplied by means of five Burgin dynamo-electric machines, which are driven by a 12-horse-power semi-portable engine by Messrs. Marshall & Sons, of Gainsborough, working up to 35-horse-power, and having been designed and constructed specially for its present work. The shed in which the engine and machines are placed is about 250 yards from the nearest point of the station, and is lighted by the Swan electric light.

Decoration in the House of Commons.—Mr. Schreiber on Tuesday called attention to the unfinished state of the Central Hall of the Houses of Parliament, and submitted a resolution declaring that the decoration of the central hall, interrupted twelve years since, should now be resumed and completed in mosaics. The hon. member argued that public money would be well spent in decorations tending to promote the enjoyment of the people by appealing to their higher tastes. Mr. C. Bentinck argued that the taste of the present day was bad, and that all mosaics executed in recent times were failures, while he laid down the proposition that public money should only be expended as to matters of this kind in the purchase of well-known and well-established works of art, or else in the encouragement of British manufactures and British art, and generally of British interests. Mr. Shaw Lefevre admitted that it was desirable to complete the decorations of the central hall in a style worthy of its architectural beauty, but deprecated haste to fill up the empty panels without certainty that the works of art to be inserted came up to the highest standard. The fact that the subject had been in abeyance eleven years proved that the question was not one of urgency; and there was no such general assent upon the subject as made it desirable to ask for a vote to complete the decorations now.

Christmas Cards Competition, Suffolk-Street.—The prizes have been awarded, and a large number have again been obtained by the ladies. The first prize, 200*l.*, has been gained by Miss Alice Havers ("A Dream of Patience"); the second, 150*l.*, by Mr. E. K. Johnson ("Single Figures, Winter Scenes"). Messrs. Hildesheimer & Faulkner, the originators of the competition, have purchased a large number of the designs contributed, beyond those to which the premiums have been awarded according to the published particulars. Considering that the awards were made by Messrs. Millais, Marcus Stone, and G. A. Storey, after the designs were hung, it says something for the cleverness of those who hung them when we mention, that all the premiated designs are in the large room, and that these, with very few exceptions, are on the eye line.

Christchurch.—The Restoration Committee of the Priory Church, Christchurch, Hants, have appointed as their architect Mr. B. Edmund Ferrey, who recently examined and reported on the body of the building. The roof to the north transept will be the first portion of the work proceeded with, as it has been found to be in a very decayed and almost dangerous condition.

A Large Piece of Glazing.—Carlisle Citadel Station, which is glazed on Rendle's "Patent Indestructible System," has an area of 330,000 square feet. Messrs. Blythe & Cunningham were the engineers.

Nuisance.—The case of Bonner *v.* The Governors of Sutton Hospital was an action of nuisance, heard at the Croydon Assizes the other day before Mr. Justice Field. The plaintiff is a builder at Godalming, and had purchased some land on which he had erected some houses. The defendants, who are the authorities of Charterhouse School, are owners of some adjoining land, on which they had erected gas-works for the purpose of supplying the school building with gas. James Bonner, the plaintiff, stated that in 1869 he purchased the piece of land and built houses on it. One of the Charterhouse masters became tenant of one of them. Gas was first made in September, 1878. After the tenant in question left, the house remained untenanted for twelve months. The smell from the gasworks was very bad. For the defendants it was contended that the nuisance complained of had been greatly exaggerated. Mr. Louis M. Stuart, the tenant of the plaintiff's house, said that he took it first at 30*l.*, and afterwards at an increased rent of 45*l.* On the average, there were sixteen boys boarding in his house. He felt no inconvenience from the proximity of the gasworks. After some time the jury intimated that they had made up their minds that the gasworks were a nuisance, and judgment was given against Dr. Haig Brown, the head-master, the mode of assessing the damages to be settled by the learned judge in case of difference between the counsel on both sides.

Cottage and Window Gardening.—The first flower-show of the Shaftesbury-park Garden Improvement Society, of which Sir Trevor Lawrence, bart., M.P., is president, has been held. The society, which was only started some four months since, has for its object the encouragement of such humble floricultural efforts as may be practicable in the tiny plots of ground dignified by the name of gardens on the Shaftesbury-park estate, near Clapham Junction. The movement was originated and is being carried on by a few of the residents, who are for the most part artisans and mechanics; and, considering the short time they have been at work, the results already attained are described as very gratifying. Prizes were offered for the most attractive gardens, the best arranged windows, the best specimens of climbing plants on walls, as well as for plants in pots and cut flowers. The schedule was carefully arranged, there being separate classes for gardens and windows with warm or cold aspects. A large number of competitors entered for all classes. Sir Trevor Lawrence visited the show in the afternoon and addressed those present, and in the evening Mr. J. Somervell, chairman of the committee, distributed the prizes, which consisted of books and articles, useful and ornamental; and a vote of thanks to the committee and secretary (Mr. B. Wynne) wound up the day.

Auckland New Cemetery: Tenders Accepted.—A meeting of the Burial Board for Auckland district was held recently, presided over by the Vicar, Canon Long. The architect for the new cemetery, Mr. Pritchett, of Darlington, reported that he had made inquiries respecting the contractors whose tenders were provisionally accepted at the last meeting, and the result was satisfactory. The tenders were then formally accepted as follows:—Mr. Carrick, of Durham, for road-making, draining, and laying-out; Mr. Ridley, of Tow Law, for mason's and plasterer's work; Messrs. Blackett & Beetham, for carpenter and joiner's work; Mr. Pollard, Bishop Auckland, for slater's work; Mr. Wouldhave, Bishop Auckland, for plumber and glazier's work; Mr. Willis, Darlington, for painter's work. The cost of the work is,—for fencing and gates, about 500*l.*; for roads, drains, laying-out, and planting, about 600*l.*; chapels, tower, and spire, about 1,450*l.*; superintendent's house, about 450*l.*; total, a few pounds under 3,000*l.*

Royal Polytechnic Institution.—Mr. Wm. Stokes is introducing some valuable new suggestions in his lectures here upon the improvement of the memory, and is explaining the practical application of his system for teaching the multiplication table by means of easily-remembered pictures.

Buildings for Dover.—It is proposed to erect a block of municipal buildings on the site of the old borough prison. The work, when completed, it is estimated, will involve an expenditure of at least 25,000*l.* Some of the local residents are protesting against the proposal.

Lambeth Palace Library will be closed for six weeks for the recess from August 29th.

The Chew Magna School Board have appointed Mr. E. Henry Edwards, of Bristol, architect for their new schools.

TENDERS

For new contagious wards, infirmary, &c., Doncaster Workhouse. Messrs. Wilson & Masters, architects. Quantities by the architects:—

J. Chambers & Son, Sheffield	£6,790 0 0
W. Anelay, Doncaster	6,290 0 0
Houldsworth, Bradford	6,165 0 0
Beastall, Doncaster	6,237 0 0
Illingworth, Bradford	6,150 0 0
Fidler, Chesterfield	6,056 0 0
Chadwick, Rotherham	5,898 0 0
Tomlinson, Leeds	5,767 0 0
Humphries & Moulson, Bradford	5,568 0 0
Arnold, Doncaster	5,544 0 0
Atkinson, Gateshead	5,535 0 0
Dennison, York	5,479 0 0
W. Smith, Sheffield	5,400 0 0
Nicholson & Son, Leeds	5,164 0 0
E. Meggitt, Thorne	5,149 0 0
Wortley, Kilnhurst (accepted)	5,100 0 0
Barnshaws, Rotherham	5,090 0 0

For the erection of boundary walling, Rutland Park estate, Sheffield. Messrs. Wilson & Masters, architects:—
J. Stone, Sheffield (accepted)

For the erection of eight houses, Nether Hall-road, Doncaster, for Mr. J. Brailsford. Messrs. Wilson & Masters, architects:—
Barker, Doncaster (accepted).

For the Doncaster Cemetery Extension, for the Cemetery Commissioners. Messrs. Wilson & Masters, architects. Quantities by the architects:—

Masonry, &c.

Stanley, Doncaster	£867 14 0
Athron Bros. & Gill, Doncaster	842 14 0
Barker, Doncaster (accepted)	703 11 9
Furnival, Doncaster	650 0 0

Ironfounder's Work.

Micklethwaite	372 0 0
Newton, Chambers, & Co.	312 0 0
Ratcliffe	297 0 0
Yates Haywood	282 0 0
Hattersley & Co.	227 0 0
Whitelay	220 0 0
Crossley (accepted)	204 5 6

For taking out window-heads and iron columns, and building new stone piers at the Town-hall, Welshpool, for the Corporation of the borough. Mr. R. Hurst, architect:—

J. Potter, Welshpool	£205 0 0
J. W. Roberts, Welshpool (accepted)	190 0 0

For painting and decorating the assembly and tea rooms at the Town-hall, Welshpool, for the Corporation of the borough. Mr. R. Hurst, architect:—

E. Preater, Newtown	£140 0 0 !
J. Forse, Shrewsbury	98 3 0
J. & A. Smith, Welshpool	69 10 0
C. Lewis, Welshpool (accepted)	55 18 9 !

For building a dwelling-house at Welshpool for Mr. W. T. Parker, J.P. Mr. R. Hurst, architect:—

C. T. Pugh, Welshpool	£220 0 0
D. P. Jones, Welshpool (accepted)	202 10 0

For rebuilding the Three Tuns, Welshpool, for Mr John Roberts. Mr. R. Hurst, architect:—

J. Potter, Welshpool (accepted)	£498 0 0
D. P. Jones, Welshpool	487 0 0

For whitewashing and varnishing to inside, and varnishing to outside, at Board of Works Offices, Greenwich:—

Stevens	£130 0 0 !
Castle	103 0 0
Bailey	95 10 0
Hatfield	92 10 0
Lyon	85 0 0
Gillard	78 0 0
Pierce	71 10 0
Holding	68 0 0
Chapman	65 0 0
Davis	64 10 0
Gale	49 12 0
Challis (accepted)	48 0 0 !

For a new front and internal alterations to No. 84, Peascod-street, Windsor. Mr. T. V. H. Davison, architect:—

W. Bond	£378 0 0
W. P. Reavell	353 0 0
F. Akery	324 0 0
J. Willis	318 0 0
R. Bishop (accepted)	308 0 0

For the erection of a new Baptist Chapel, Adelaide-square, Windsor. Mr. T. V. H. Davison, architect:—
E. Knapp (accepted).

For new mahogany fittings for Mr. F. Gorringe's new premises, Buckingham Palace-road. Mr. J. T. Walford, architect. Quantities supplied:—

Trebel & Son	£2,570 0 0
Drew & Cadman	2,340 0 0
F. Sage (accepted)	1,950 0 0

For the erection of a house in Lewin-road, Streatham, for Mr. James Amsden. Mr. W. Paice, architect. Quantities supplied.

R. & E. Smith	£1,100 0 0
Sawyer	1,053 0 0
Downs	960 0 0
Young, Cochrane, & Fraser	890 0 0
J. O. Richardson	884 19 4
Smith	876 0 0
Thorner & Co.	876 0 0

For the erection of lodge to Intercepting Hospital, Queenstown, for the Cork Board of Guardians. Mr. D. J. Coakley, architect:—

Burke	£103 0 0
Flyan (accepted)	92 0 0

For the erection of a villa residence at Ashford, for the Directors of the House Improvement and Supply Association, Limited. Mr. A. Bedborough, architect. Quantities supplied by Messrs. R. L. Curtis & Sons:—

Balaam, Bros.	£3,125 0 0
Howell & Son	2,620 0 0
Hobern & Co.	2,600 0 0
D. C. Jones & Co.	2,444 0 0
Naylar & Son	2,398 0 0
E. Vaughan	2,377 0 0
R. Avard	2,349 0 0
G. Parker	2,342 0 0
Wallis & Clements	2,274 0 0

For rebuilding the Grosvenor Arms, Grosvenor-street, Bond-street. Mr. W. Seth Payne, architect. Quantities by Messrs. Hoveden, Heath, & Berridge:—

G. H. & A. Bywaters	£2,760 0 0
J. Outhwaite & Son	2,703 0 0
J. H. Tarrant & Son	2,691 0 0
Robt. Perkins	2,647 0 0
E. Conder	2,600 0 0
Lathey Bros.	2,595 0 0
E. Lawrence	2,580 0 0
Richard Conder	2,535 0 0
W. Scrivener & Co., 8, Fitzroy-road, Regent's Park (accepted)	2,494 0 0

For alterations and decorations to No. 9, Upper Bedford-place, Russell-square. Mr. W. Seth Payne, architect:—
Broad & Son, 61, Kenton-street, Russell-square (accepted) £235 0 0

For building a pair of cottages, Norman-road, Leytonstone. Mr. W. Seth Payne, architect:—

C. Mansfield	£693 0 0
W. Buckle, Great Eastern-road, Stratford (accepted)	650 0 0

For a public-house, Campsbourne-road, Hornsey, for Mr. E. Hadgell. Mr. W. Bradford, architect. Quantities supplied by Messrs. J. & A. E. Bull:—
Brooks £2,750 0 0

For alterations and additions to No. 3, Leicester-street. Mr. W. Bradford, architect. Quantities supplied by Messrs. J. & A. E. Bull:—

Newton	£342 0 0
Ashwell & Co.	315 0 0
Garrett & Son	288 0 0
W. H. Smith (accepted)	288 0 0

For alterations and additions to No. 5, Lamb's Conduit-street. Mr. W. Bradford, architect. Quantities supplied by Messrs. J. & A. E. Bull:—

Newton	£495 0 0
Garrett & Son	403 0 0
Ashwell & Co.	397 0 0
W. H. Smith (accepted)	389 0 0

For alterations and additions to No. 12, Catherine-road Croydon. Mr. William Bradford, architect. Quantities supplied by Messrs. J. & A. E. Bull:—

Richardson	£300 0 0
Taylor	300 0 0
Scriven	298 0 0
Waduey	292 0 0
Tegg	291 0 0

For rebuilding No. 3, Oakley-street, Bethnal Green, for Mr. T. Griggs. Mr. A. Stanton Cook, architect:—

Pritchard	£618 0 0
Thomason	500 0 0
Wire, Bethnal Green (accepted)	490 0 0

For works at Iver-grove, Iver, Bucks. Messrs. J. & J. S. Edmeston, architects:—

Lucas	£1,062 0 0
Nye	995 0 0
Jackson & Graham	930 0 0

For building new chapel in the Romford-road, Forest Gate, Essex. Mr. J. Wallis Chapman, architect. Quantities by Messrs. Goodchild & Son:—

Rickett	£4,100 0 0
Morter	4,031 0 0
Higgs & Hill	3,999 0 0
Lawrence	3,997 0 0
Abraham	3,797 0 0
Gregar	3,654 0 0
Hosking	3,597 0 0
Woodward	3,460 0 0
Taylor & Grist	3,429 0 0

For stable buildings and covered yard at Henstridge, Somerset, for the Improved Somerset Cider Company. Mr. E. Austin Cooke, architect. Quantities supplied:—

Richard Escott, Bridgewater	£2,131 0 0
Edward Abley, Salisbury	2,100 0 0
Stephens & Bastow, Bristol	2,091 0 0

For providing and fixing fire-hose and fittings at St. Marylebone Infirmary, for the Guardians of the Poor of the Parish of St. Marylebone. Messrs. H. Saxon Snell & Son, architects:—

Potter & Sons	£493 0 0
May Bros.	474 9 2
Benham & Sons	360 0 0
Shand & Mason (accepted)	350 0 0

For nine residences at Ravenscroft Park, Barnet, for Mr. Thomas Smith. Messrs. Brooking & Nelson, architects:—

T. Ennor, Julian, & Co.	£9,990 0 0
Dunford & Langham	9,844 0 0
Roberts	9,810 0 0
Grover	9,784 0 0
Marriott	8,499 0 0
Beale	8,444 0 0

For a pair of villa-residences, Worple-road, Epsom. Mr. J. Hatchard Smith, architect:—
Hopkin & Paine (accepted) £1,285 0 0

For farmhouse (exclusive of farm-buildings), Magdalen, Norfolk. Mr. J. Hatchard Smith, architect:—
G. Cousins (accepted) £2,100 0 0

For the erection of new schools and dormitories for the Guardians of the Brentford Union, Isleworth. Mr. Edward Monson, jun., architect. Quantities by Mr. F. T. W. Miller:—

		Deduct if sand and ballast raised on site.
B. E. Nightingale, Albert Works, Albert Embankment	£24,953	£212
Ennor, Julian, & Co., Marshall-street, St. George's-road, E.C.	23,990	550
Messom & Son, Twickenham	23,735	400
T. Hiscock, Hounslow	22,999	200
F. Taylor, Uxbridge	22,440	496
Henry Haynes, Alperton, Harrow.	22,100	270
C. Claridge, Banbury	21,500	300
T. Beauchamp, Brentford-end	21,350	40
Joseph Dorey, Brentford	21,176	350
C. Maton, Kew, Surrey	20,436	439
T. Brunsden, Brentford (accepted)	19,424	400

For proposed new Synagogue, St. John's Wood. Mr. H. H. Collins, architect:—

Bywaters	£12,155 0 0
Mark	11,387 0 0
David King & Son	11,233 0 0
Bentley	10,983 0 0
Ashby Bros.	10,960 0 0
Croker & Co.	10,936 0 0
Abrahams	10,770 0 0
Langmead & Wray	10,678 0 0
Downs	10,672 0 0
Ashby & Horner	10,641 0 0
Brass	10,587 0 0
Merritt & Ashby	10,123 0 0
Kirk & Randall	10,095 0 0
Holland & Hannen, too late.	

For rebuilding Nos. 16 and 18, King's-road. Mr. Geo. Edwards, architect. Quantities by Mr. Henry Lovegrove:—

Lathey	£2,490 0 0
MacLachlan	2,480 0 0
King	2,443 0 0
Craske	2,352 0 0
Richardson	2,335 0 0
Gilham & Co	2,328 0 0
Hickinbotham	2,298 0 0
Stimpson	2,220 0 0
Green (accepted)	2,038 0 0

For the erection of shop, &c., Bethnal Green-road, for Mr. Thos. Key. Messrs. Borer & Gathercold, architects. Quantities by Mr. Henry Lovegrove:—

Jarvis & Son	£2,149 0 0
Ward	2,089 0 0
Staines & Son	2,062 0 0
Brass (too late)	1,993 0 0
Wire	1,990 0 0
Hunt	1,984 0 0
Sharman	1,983 0 0
Jackson & Todd	1,960 0 0
Sabey & Son	1,898 0 0
Sarjeant (accepted)	1,895 0 0

For new roads, Nether Hall Estate, Doncaster. Messrs. Wilson & Masters, architects. Quantities by the architects:—

	No. 1.	No. 2.
Shelton, Sheffield	£2,558 0 0	£2,908 8 0
Spring, Sheffield	2,275 0 0	2,495 0 0
Jowitt, Brighouse	1,939 11 10½	2,059 11 10½
Haywood,* Wortley	1,850 0 0	2,064 0 0
Pugh & Morton (withdrawn).		

* Accepted.

For new roads, Rutland Park estate, Sheffield. Messrs. Wilson & Masters, architects. Quantities by architects:—

Thompson, Sheffield	£1,500 0 0
Hawke & Smith, Sheffield	1,500 0 0
W. Smith, Sheffield	1,170 0 0
Dickenson, Sheffield	1,137 0 0
Andrews & Spring, Sheffield	1,016 0 0
Haywood, Wortley	1,014 0 0
J. Stone, Sheffield	996 0 0
Skelton, Sheffield (accepted)	944 0 0

For new counter and pewterer's work at the Mason's Arms, York-road, Battersea, for Mr. E. Purchase. Mr. H. J. Newton, architect:—

Warne	£270 0 0
Heath	249 0 0
Hellings (accepted)	230 0 0

For alterations to the Stag, Brooksby-walk, Homerton, for Mr. Stephens. Mr. H. J. Newton, architect:—

Jackson & Todd	£634 0 0
Walker	623 0 0
Wood	597 0 0
Auley	590 0 0
Hawkins (accepted)	462 0 0
Counter, &c.	
G. & J. Rogers	£182 0 0
Hellings	175 0 0
Heath	169 0 0
W. Rogers (accepted)	156 14 0

For the partial reconstruction and general repairs to about 250 ft. of 6 ft. diameter surface water culvert in the Pembroke-road, Hornsey. Mr. T. de Courcy Meade, surveyor:—

Dunmore, Crouch-end	£697 0 0
Kave	625 0 0
Pizzey, Hornsey	590 0 0
Ford & Evered	578 0 0
Strahan & Co., Wood-green (accepted)	448 15 0

For alterations and additions to Single-villa, Maindee, Newport, Monmouthshire, for Mr. John Clarke. Mr. E. A. Lansdowne, architect. No quantities:—

Moulton & Brownscombe, Newport	£537 10 0
L. B. Moore, Newport	527 0 0
Jones & Diamond, Newport	520 0 0
Norwal, Newport	505 0 0
G. Morgan, Newport	450 0 0
S. Swanton, Newport	445 0 0

For completion of contract, known as No. 1, for Colliers' Hall, Cwm Tilery, Newport, Monmouthshire, for the South Wales Colliery Company. Mr. E. A. Lansdowne, architect. Quantities supplied:—

W. Jones & Son, Newport	£387 0 0
Morgan & Evans, Pontypool	334 0 0
G. Martin, Newport	290 0 0
Jones & Diamond, Newport	282 0 0
E. Giles, Pontrilas	268 0 0

For the erection of three houses on the Carrignafoy Estate, Queenstown, exclusive of railway gates and boundary-walls. Mr. D. J. Coakley, architect:—

Mullany, Cork	£1,150 0 0

For the erection of a pair of villa-residences, Cranbrook Park, Ilford, for Mr. G. Beazley. Mr. A. Stanton Cook, architect:—

Godbold, Ilford (accepted).

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All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

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